PIONEER
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Service Manual

DEH-625R/EW

ORDER NO.
CRT1808

HIGH POWER CD PLAYER WITH RDS TUNER

DEH-625R EW
DEH-624R EW
DEH-525R EW
DEH-524R EW
DEH-424R GR

HIGH POWER CD PLAYER WITH FM/MW/LW TUNER

DEH-424 EW
DEH-425 IT

COMPACT disc DIGITAL AUDIO

- **See the service manual CX-597(CRT1811) for the CD mechanism description, disassembly and circuit description.**
- **The CD mechanism employed in this model is one of CX-597 series.**

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● **CD Player Service Precautions**

1. For pickup unit(CGY1070) handling, please refer to"Disassembly"(CX-597 Service Manual CRT1811). During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a short pin).
2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.

1. SAFETY INFORMATION

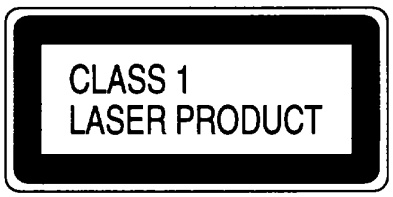
1. Safety Precautions for those who Service this Unit.

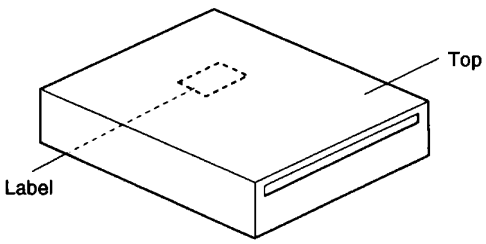
- **When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.**

Caution:

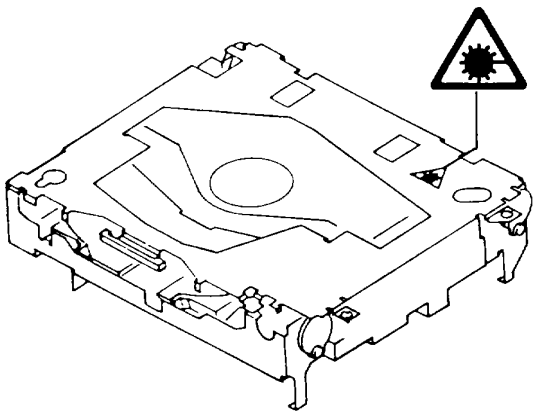
1. During repair or tests, minimum distance of 13cm from the focus lens must be kept.
2. During repair or tests, do not view laser beam for 10 seconds or longer.

2. A "CLASS 1 LASER PRODUCT" label is affixed to the bottom of the player.





3. The triangular label is attached to the mechanism unit frame.



4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.
Wavelength = 800 nanometers

2. SPECIFICATIONS

General

Power source ..... 14.4 V DC (10.8 — 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 10.0 A
Dimensions
(mounting size) ..... 178 (W) × 50 (H) × 150 (D) mm
(front face) ..... 188 (W) × 58 (H) × 22 (D) mm
Weight ..... 1.5 kg

Amplifier

Maximum power output ..... 35 W × 4
Continuous power output ..... 22 W × 4
(DIN45324, +B=14.4 V)
Load impedance ..... 4 Ω (4 — 8 Ω allowable)
Preout output level/output impedance ..... 500 mV/ 1 kΩ
Tone controls
(Bass) ..... ±12 dB (100 Hz)
(Treble) ..... ±12 dB (10 kHz)
Loudness contour ..... +10 dB (100 Hz), +7 dB (10 kHz)
(volume: –30 dB)

CD player

System ..... Compact disc audio system
Usable discs ..... Compact disc
Signal format ..... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Frequency characteristics ..... 5 — 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 94 dB (1 kHz)(IEC-A network)
Dynamic range ..... 90 dB (1 kHz)
Number of channels ..... 2 (stereo)

FM tuner

Frequency range ..... 87.5 — 108 MHz
Usable sensitivity ..... 11 dBf (1.0 μV/75Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity ..... 16 dBf (1.7 μV/75Ω, mono)
Signal-to-noise ratio ..... 70 dB (IEC-A network)
Distortion ..... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response ..... 30 — 15,000 Hz (±3 dB)
Stereo separation ..... 40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range ..... 531 — 1,602 kHz
Usable sensitivity ..... 18 μV (25 dB) (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

LW tuner

Frequency range ..... 153 — 281 kHz
Usable sensitivity ..... 30 μV (30 dB) (S/N: 20 dB)
Selectivity ..... 50 dB (±9 kHz)

Note:
Specifications and the design are subject to possible modification without notice due to improvements.

3.OPERATION AND CONNECTION

Tuner Operation

Tuner Source and Band

- **Push the SOURCE button or the Tuner button to select Tuner.**

  The program service name or frequency appears on the display.

  ("⊙" indicator lights when stereo station selected.)

- **Use the BAND button to select the desired band.**

  (F1, F2, MW/LW)

AF Function Switching

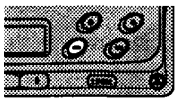
This tuner/CD player's AF function can be switched ON and OFF. AF should be switched OFF for normal tuning operations.

- **Press the AF button to switch AF OFF.**

  "AF" disappears.

  Press the AF button again to switch AF ON.

  "AF" appears on the display.

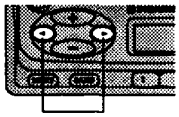


Manual and Seek Tuning

Both Manual (step-by-step) and Seek (automatic) tuning are available.

1. **Press the (◄) and (►) buttons simultaneously to switch alternately between the Manual and Seek tuning modes.**

   The "MANU" indicator lights when Manual tuning is selected and turns OFF when Seek tuning is selected.



2. **Press the (►) button to tune the receiver to a higher frequency.**

   MANU ON (Manual tuning):
   The frequency changes step by step.
   MANU OFF (Seek Tuning):
   The tuner automatically seeks out and receives broadcasting stations.

- **Press the (◄) button to tune the receiver to a lower frequency.**

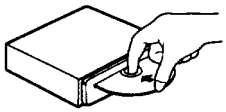
Using the Built-in CD Player

The built-in CD player plays one standard 12 cm or 8 cm (single) CD at a time. Do not use an adapter when playing 8 cm CD.

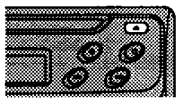
Inserting and Removing Discs

- **Insert the disc with the recorded (iridescent) surface down.**

  CD playback begins immediately, whether or not the player is ON or the built-in CD source selected. The track number and playing time are displayed.



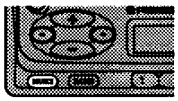
- **Press the Eject button to eject any disc loaded in the disc slot.**

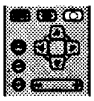


Playing the Built-in CD player

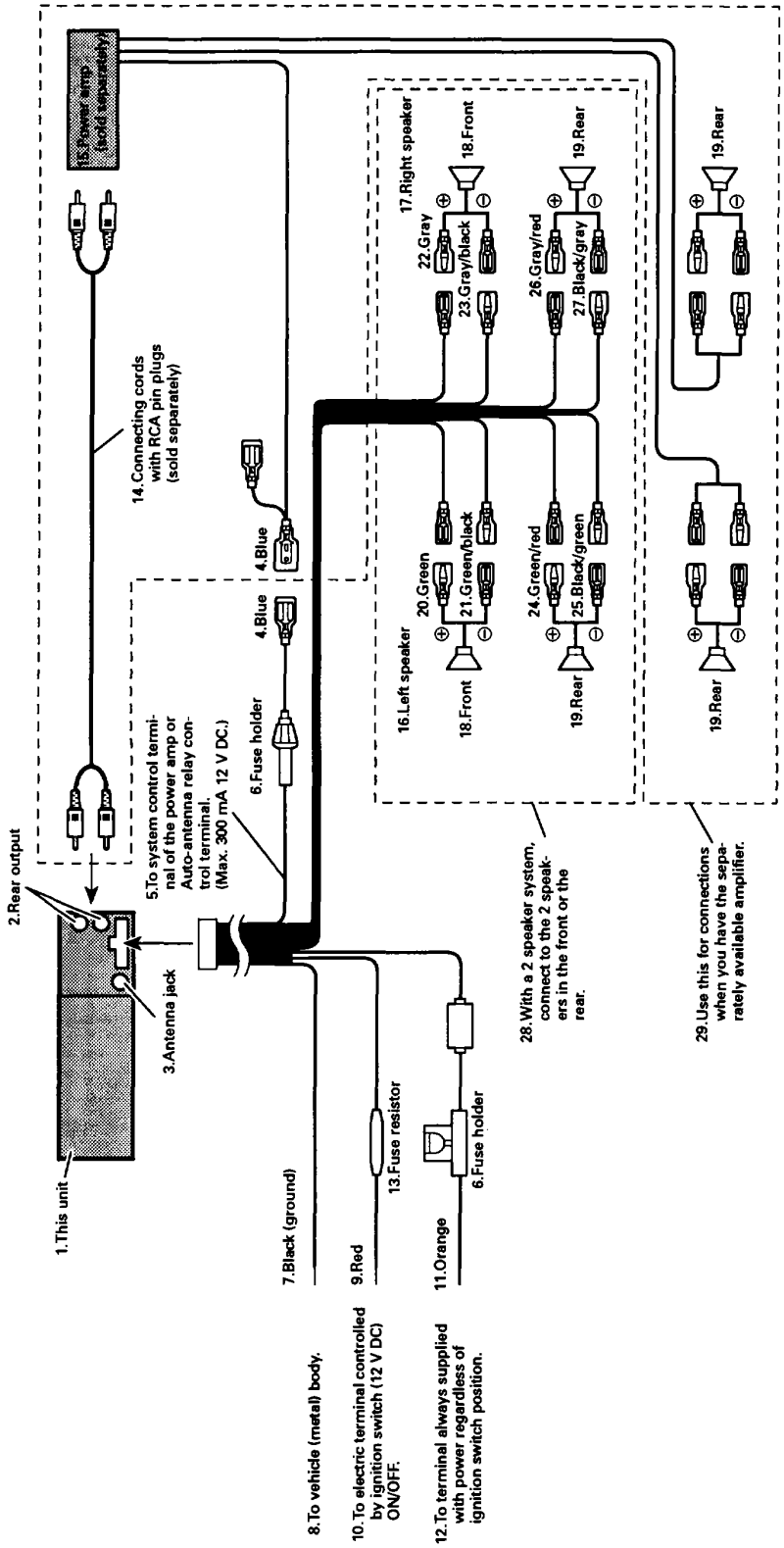
- **To play a CD that is already loaded, press the SOURCE or CD button with a CD loaded to select the built-in CD player.**

  The built-in CD player is selected only when a CD is loaded.





● Connection Diagram



4. DISASSEMBLY

● Removing the Case(Not shown)

1. Remove the two screws.
2. Insert and turn a flat screwdriver at locations indicated by arrows to remove the case.

● Removing the Detach Grille Assy(Fig.1)

1. Press the detach button, and then pull detach grille assy.

● Removing the Panel Assy(Fig.1)

1. Disconnect the two stoppers indicated by arrows, and then remove the panel assy.

● Removing the CD Mechanism Module(Fig.1)

1. Remove the four screws.
2. Disconnect the connector.
3. Remove the CD mechanism module.

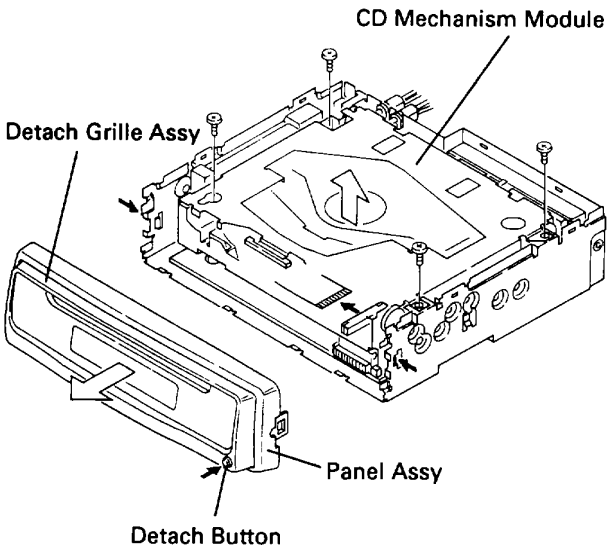


Fig.1

● Removing the Chassis Unit(Fig.2)

1. Remove the screw A, two screws B, screw C and two screws D.
2. Stretch the claw.
3. Remove the two cords, and then remove the chassis unit.

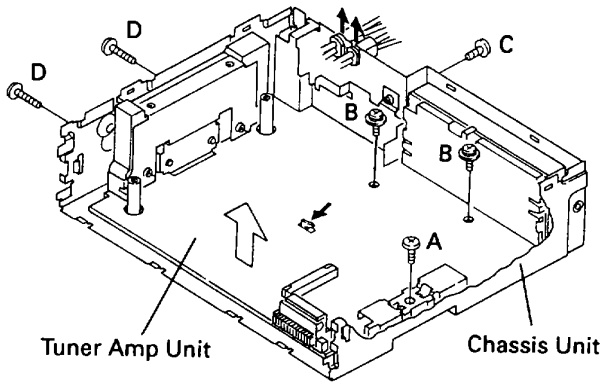


Fig.2

5. ADJUSTMENT

● Connection Diagram

NOTE:
Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.

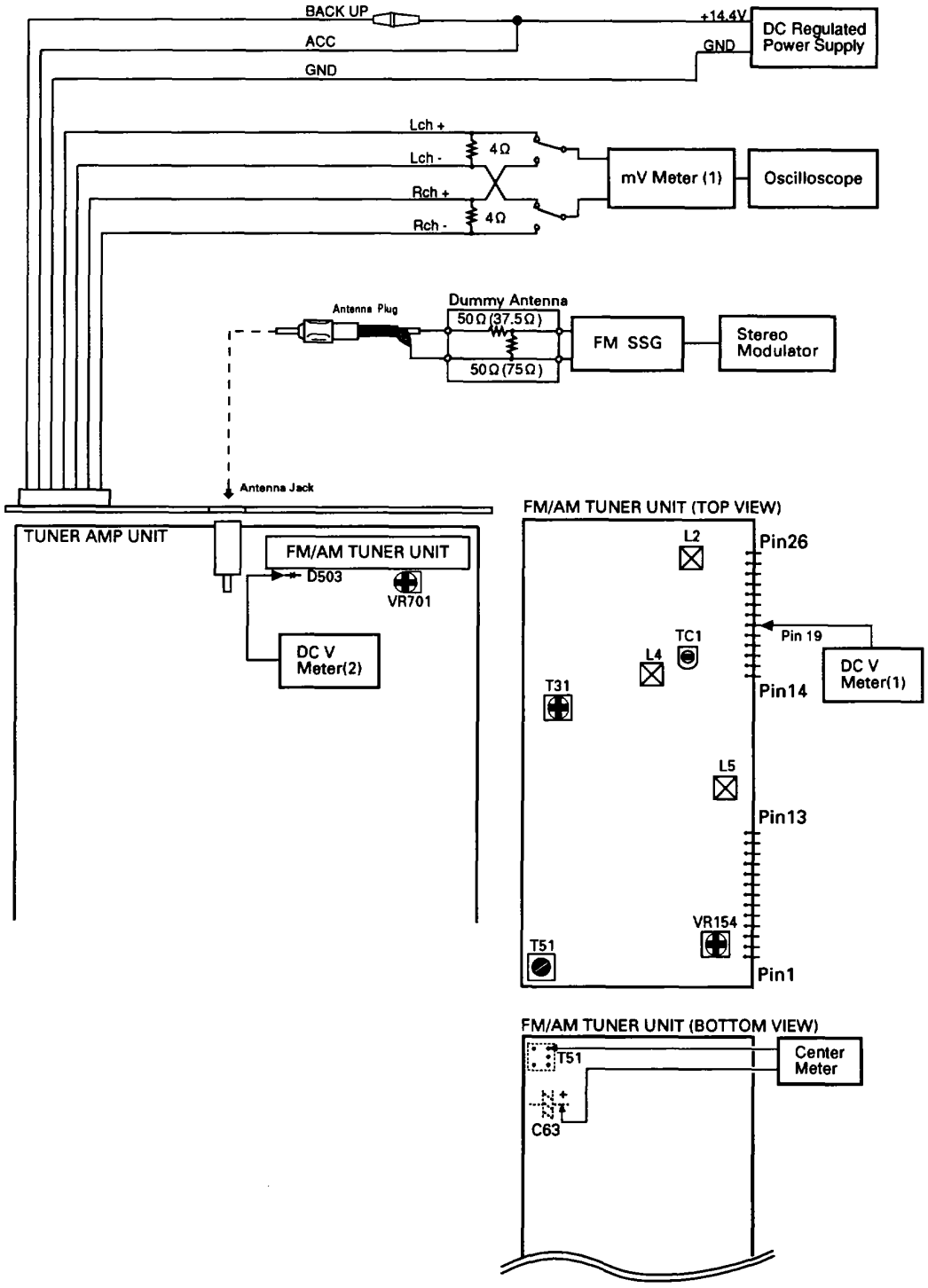


Fig. 3

FM ADJUSTMENT

Modulation M:MONO MOD., 400Hz 30%(22.5kHz Dev.)
S:STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)

NOTE:Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

	No.	FM SSG		Displayed	Adjustment	Adjustment Method
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
TUN Volt	1	•••••	•••••	108.0	L5	DC V Meter(1) : 6V
IF	1	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	1	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	1	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
Image	1	129.3 M	60—80	107.9	TC1	mV Meter(1) : Minimum
IFT	1	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	1	98.1 S	39	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

RDS SL ADJUSTMENT

	No.	FM SSG		Displayed	Adjustment	Adjustment Method
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
	1	106.1 M	52	106.1	VR701	DC V Meter(2) : 2.25V±0.05V

6. TEST MODE

6.1 TEST MODE

1)Precautions

· This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFO(approx. 2.5V) instead of GND.
If REFO and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.
Do not connect the negative probe of the measuring equipment to REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO with the channel 2 negative probe connected to GND.
Since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.
If by accident REFO comes in contact with GND, immediately switch the regulator or power OFF.

· Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

· Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.

· Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

· Test mode starting procedure
Switch ACC, back-up ON while pressing the 4 and 6 keys together.

· Test mode cancellation
Switch ACC, back-up OFF.

· Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently, if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment, the following malfunctions may occur.
*During PLAY, even if the eject button is pressed, the disc will not be ejected and the unit will remain in the PLAY mode.
*The unit will not load a disc.
When the unit malfunctions this way, either re-position the light source, move the unit or cover the photo transistor.

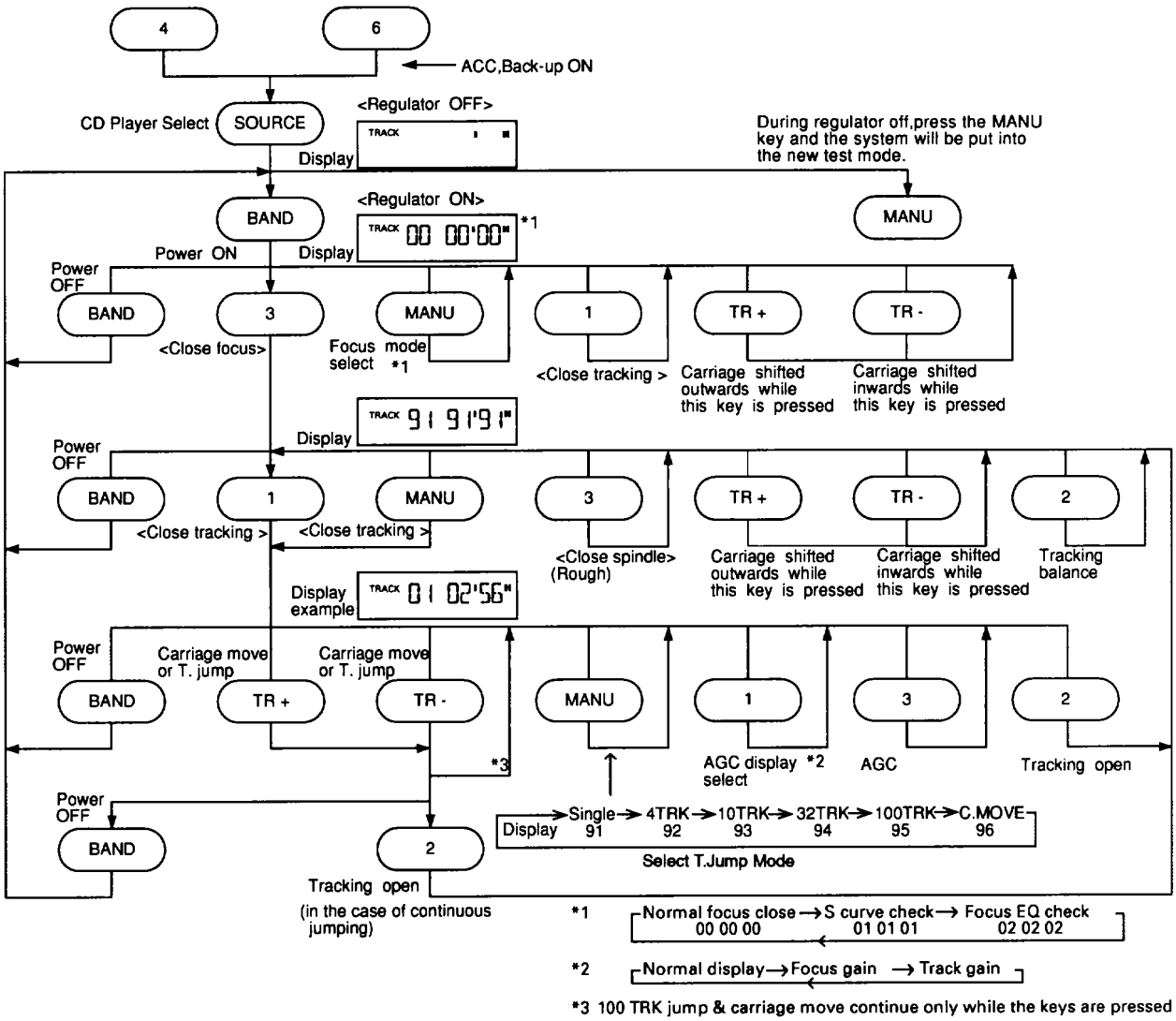
· When loading and unloading discs during adjustment procedures, always wait for the disc to be properly clamped or ejected before pressing another key. Otherwise, there is a risk of the actuator being destroyed.

· Turn power off when pressing the button TR+ or the button TR- key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

· SINGLE/4TRK/10TRK/32TRK will continue to operate even after the key is released.Tracking is closed the moment C-MOVE is released.

· JUMP MODE resets to SINGLE as soon as power is switched off.

● Flow Chart


4
6
ACC,Back-up ON
CD Player Select
SOURCE
<Regulator OFF>
Display
During regulator off,press the MANU key and the system will be put into the new test mode.
BAND
<Regulator ON>
*1
MANU
Power ON
Display
Power OFF
BAND
3
MANU
1
TR +
TR -
<Close focus>
Focus mode select *1
<Close tracking >
Carriage shifted outwards while this key is pressed
Carriage shifted inwards while this key is pressed
Display
Power OFF
BAND
1
MANU
3
TR +
TR -
2
<Close tracking >
<Close tracking >
<Close spindle> (Rough)
Carriage shifted outwards while this key is pressed
Carriage shifted inwards while this key is pressed
Tracking balance
Display example
Power OFF
Carriage move or T. jump
Carriage move or T. jump
BAND
TR +
TR -
MANU
1
3
2
*3
AGC display *2 select
AGC
Tracking open
Power OFF
BAND
2
Display
Single
4TRK
10TRK
32TRK
100TRK
C.MOVE
91
92
93
94
95
96
Select T.Jump Mode
Tracking open
(in the case of continuous jumping)
*1
Normal focus close
00 00 00
S curve check
01 01 01
Focus EQ check
02 02 02
*2
Normal display
Focus gain
Track gain
*3 100 TRK jump & carriage move continue only while the keys are pressed

6.2 ERROR NUMBERS AND NEW TEST MODE

● Error Number Indication

If the CD should fail to operate or if an error has taken place during operation the player will enter into the error mode, and the cause of the error will be numerically indicated.

This is aimed at assisting in analysis or repair.

(1) Basic Means of Display

·With ERROR indicated in "MODE" on IP-BUS Display data, an error code is transmitted by the use of MIN and SEC. The MIN and SEC data will be identical.

·Examples of Display ERROR-XX

(2) Error Codes

Error Code	Classification	Description	Cause/Detail
10	ELECTRIC	Carriage home failure	Carriage doesn't move to or from the innermost position →Home switch failed and/or carriage immobile
11	ELECTRIC	Focus failure	Focus failed →Defects, disc upside-down, severe vibration
12	ELECTRIC	SETUP failure Subcode failure	Spindle failed to lock or subcode unreadable →Spindle defective, defect, severe vibration
14	ELECTRIC	Mirror failure	Unrecorded CD-R The disc is upside-down, defects, vibration
17	ELECTRIC	Set up failure	AGC protect failed →Defects, disc upside-down, severe vibration
30	ELECTRIC	Search time out	Failed to reach target address →Carriage/tracking defective and/or defects
A0	SYSTEM	Power failure	Power overvoltage or short circuit detected →Switching transistor defective and/or power abnormal

"defects" means scratches, dirt etc an the surface of the disc.

● New Test Mode(aging operation and setup analysis)

The single CD player plays in normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disc number).

During the setup, the CD software operation status (internal RAM and C-point)is displayed.

(1) How to enter NEW TEST Mode

See the test mode flow chart Page 11.

(2) Relations of keys between TEST and NEW TEST Modes

Keys	Test Mode		New Test Mode	
	Regulator OFF	Regulator ON	PLAY in progress	Error Occurred, Protection Activated
BAND	Regulator ON	Regulator OFF	—	Time of occurrence / cause of error select
TR+	—	FWD-KICK	TRACK+ / FF	—
TR-	—	REV-KICK	TRACK- / REV	—
1	—	TRACKING CLOSE	SCAN	—
2	—	TRACKING OPEN	REPEAT	—
3	—	FOCUS CLOSE	RANDOM	—
MANU	To New Test Mode Select	FOCUS MODE	AUTO/MANU	—

Operations, such as EJECT, CD ON/OFF, etc. are performed normally.

(3) Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause	Detail
40	ELECTRIC	PLAY	FOK=L 100ms	Put out of focus	Scratch, Stain, Vibration, Servo defect, etc...
41	ELECTRIC	PLAY	LOCK=L 100ms	Spindle unlock	
42	ELECTRIC	PLAY	Subcode unacceptable 500ms	Failed to read subcode	
43	ELECTRIC	PLAY	Sound skipped	Last address memory operated	

(4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving inwards	10-second time out, Home switch failed
03	Carriage moving outwards	10-second time out, Home switch failed
05	Carriage moving outwards	None
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closure (XSI=L)	Failure to close focus
10,14	Waiting for focus closure (FOK=H)	Failure to close focus
15, 16, 17	Focus closed, Tracking open	Focus disrupted
18	During focus AGC Subcode waiting	Focus disrupted
19	During tracking AGC	Disrupted focus
20	Waiting for MIRR, LOCK or subcode read Carriage closed, SPINDLE=ADAPTIVE	Focus disrupted, MIRR NG, Failure to lock, Failed to read subcode

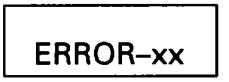
(5) Example of Display.

·SET UP in progress

·Operation (PLAY, SEARCH, etc.) in progress perfectly identical with that in the normal mode.

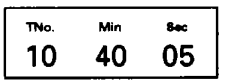
·Protection/Error upon occurrence

(a) Error number indicated



Select the display with the BAND key.

(b) Track number and absolute time indicated



7. IC INFORMATION

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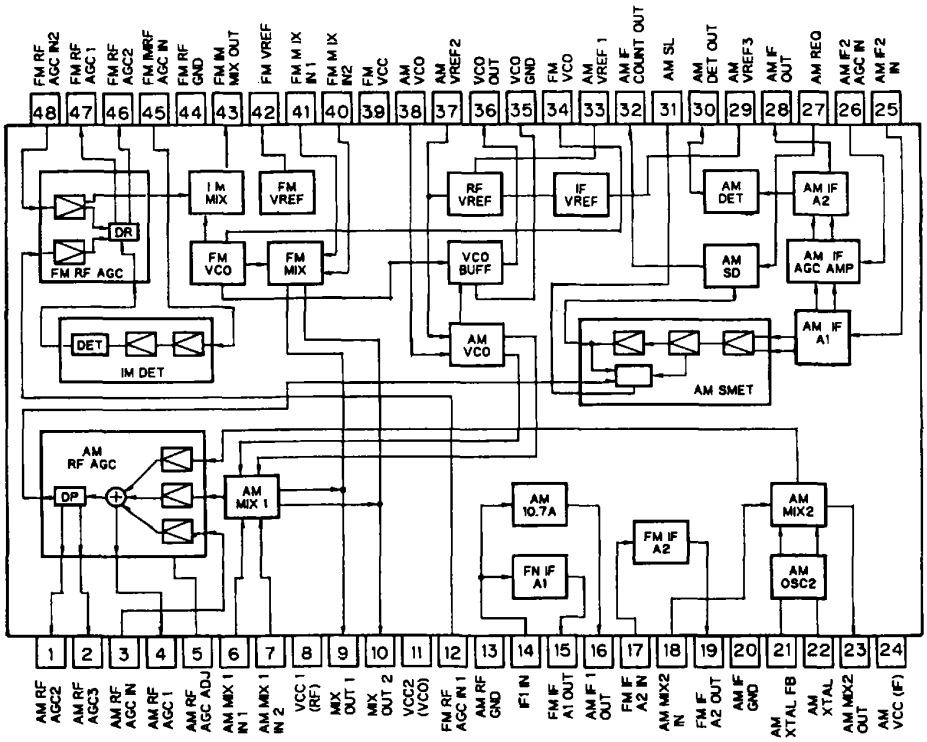
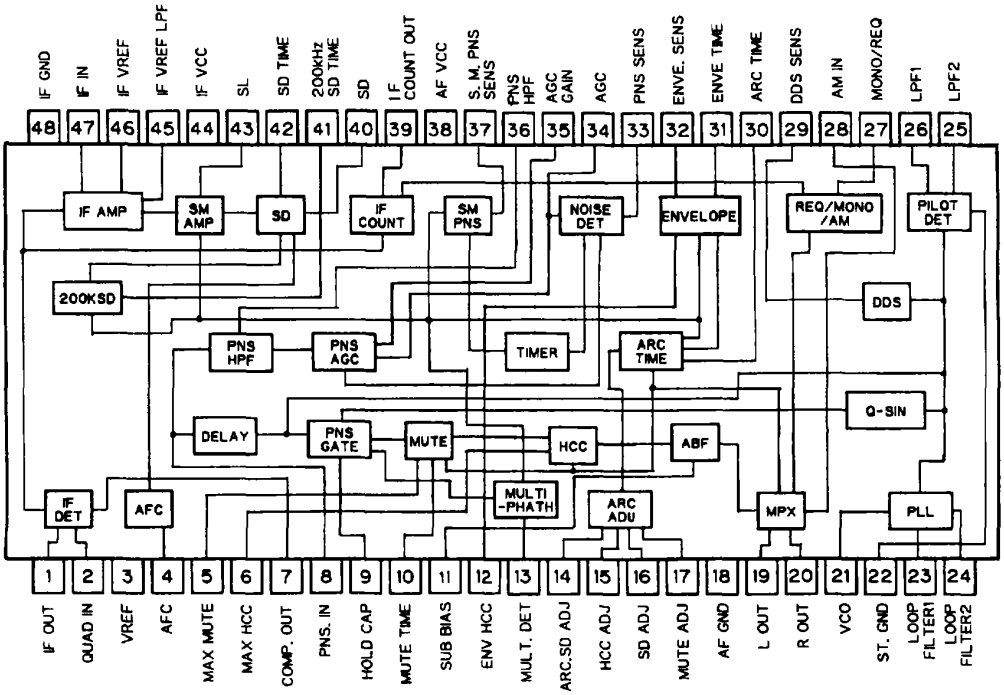


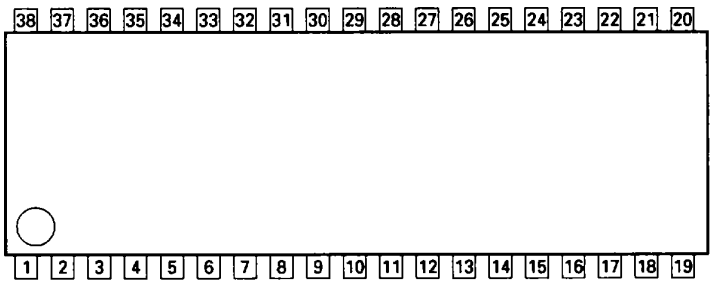
PA4024A



● **Pin Functions (UPC2572GS)**

Pin No.	Pin Name	I/O	Function and Operation
1	EFM-IN	I	EFM comparator input
2	AGC-OUT	O	AGC amplifier output
3	C. AGC		Connects AGC peak detection condenser
4	RF-IN	I	RF signal DC component cut input
5	RF-OUT	O	RF amplifier output
6	RF-	I	RF amplifier inverted input
7	C1, 3T		Connects RF3T component detection condenser
8	C2, 3T		Connects RF3T component detection condenser
9	Vcc		Power supply
10	A	I	A signal input
11	C	I	C signal input
12	B	I	B signal input
13	D	I	D signal input
14	F	I	F signal input
15	E	I	E signal input
16	PD	I	APC amplifier input
17	LD	O	APC amplifier output
18	LDON	I	Laser diode ON/OFF input
19	VREF-OUT	O	Reference voltage output
20	VREF-IN	I	Reference voltage input
21	DET-OUT	O	Vibration detection circuit output
22	DET-IN	I	Vibration detection circuit input
23	TE-OUT2	O	Tracking error amplifier output (fourfold gain)
24	TE-OUT1	O	Tracking error amplifier output (singlefold gain)
25	TE-	I	Tracking error amplifier inverted input
26	GND		GND
27	FE-	I	Focus error amplifier inverted input
28	FE-OUT	O	Focus error amplifier output
29	C.FE	I	Focus error signal DC component cut input
30	3T-OUT	O	RF3T component output
31	MIRR	O	MIRR signal output
32	RFOK	O	RFOK signal output
33	DEFECT	O	DEFECT signal output
34	C. DEF		Connects DEFECT signal detection condenser
35	EFM-OUT	O	EFM comparator output
36	ASY	I	EFM comparator level input
37	TE-BAL	I	Tracking balance control
38	FE-BAL	I	Focus balance control

UPC2572GS

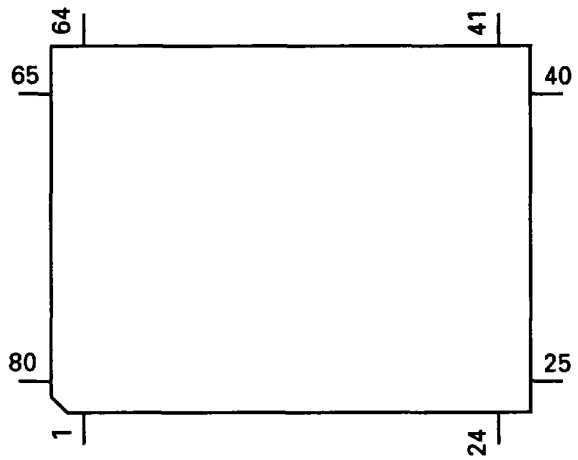


● **Pin Functions (UPD63702GF)**

Pin No.	Pin Name	I/O	Function and Operation
1	D.VDD		Supplies current of positive voltage to the logic circuits
2	$\overline{RST}$	I	System reset input pin
3	AO	I	Microcomputer interface AO="L": $\overline{STB}$ active and set to address register AO="H": $\overline{STB}$ active and set to parameter
4	$\overline{STB}$	I	Signal to latch serial data within the LSI
5	$\overline{SCK}$	I	Clock input pin to input and output serial data
6	SO	O	Outputs serial data and status signal
7	SI	I	Serial data input pin
8	D.GND		Logic circuit GND
9	X.GND		Crystal oscillation circuit GND
10	XTAL	I	Crystal oscillator connection pin
11	$\overline{XTAL}$	O	Crystal oscillator connection pin
12	X.VDD		Supplies current of positive voltage to the crystal oscillation circuit
13	DA.VDD		Supplies current of positive voltage to the D/A converter
14	R+	O	Right channel analog audio data output pin
15	R-	O	Right channel analog audio data output pin
16,17	DA.GND		D/A converter GND
18	L-	O	Left channel analog audio data output pin
19	L+	O	Left channel analog audio data output pin
20	DA.VDD		Supplies current of positive voltage to the D/A converter
21	D.VDD		Supplies current of positive voltage to logic circuit
22	FLAG	O	Flag output pin to indicate that audio data currently being output consists of noncorrectable data
23	WDCK	O	Pin to output double the frequency of LRCK
24	C16M	O	Pin to output the clock
25	EMPH	O	Output pin for the pre-emphasis data in the sub-Q code
26	DIN	I	Input pin for serial audio data
27	DOUT	O	Output pin for the serial audio data
28	SCKO	O	Output pin for the clock for the serial audio data
29	LRCK	O	Signals to distinguish the right and left channels of the audio data output from DOUT. Frequency is 44.1kHz at 50% duty at normal regeneration
30	TX	O	Output pin for the digital audio interface data
31	CTLV	I	Oscillation control pin for high-frequency clock generation VCO used for the digital PLL upon regeneration at fast speed of 2- or 4-fold
32	POUT	O	Output point for phase comparison
33	D.GND		GND for the logic circuit
34	VCO	I	Input pin for the inverter
35	$\overline{VCO}$	O	Output pin for the inverter
36	D.VDD		Supplies current of positive voltage to the logic circuit
37	PLCK	O	Pin for monitoring the bit clock
38	LOCK	O	Indicates "H" when the synchronized pattern detection signal matches the frame counter output at the EFM recovery modulation, and "L" when they don't match
39	WFCK	O	Minute-cycle signal for the bit clock, the signal indicates the cycle of 1 frame (approx. 7.35kHz)
40	RFCK	O	Minute-cycle signal for the clock, the signal indicates cycle of 1 frame (approx. 7.35kHz)
41	D.GND		GND for the logic circuit
42,43	TEST0,1	I	Test pins
44,45	TM2, TM4	I	Pins for controlling regeneration at fast speed of 2- or 4-fold
46-49	T4-T7	I	Test pins
50,51	C1D1, C1D2	O	Output pin for indicating the C1 error correction results
52-54	C2D1-C2D3	O	Output pin for indicating the C2 error correction results
55	D.VDD		Supplies current of positive voltage to the logic circuit
56	SFSY	O	Outputs 1 word of the subcode. Generally, 1 cycle is approx 136 micro seconds
57	SBSY	O	The signal indicates the beginning of the subcode block. The SFSY signal is output at high level every 98 times
58	SBSO	O	Output pin for the subcode data

Pin No.	Pin Name	I/O	Function and Operation
59	SBCK	I	Input pin for the clock signal for read-out of the subcode data
60	A.GND		GND for the analog circuit
61	MD	O	Output pin for the spindle drive
62	SD	O	Output pin for the sled drive
63	TD	O	Output pin for the tracking drive
64	FD	O	Output pin for the focus drive
65	FBAL	O	Output pin for the focus balance control
66	TBAL	O	Output pin for the tracking balance control
67	A.VDD		Supplies current of positive voltage to the analog circuit
68	TBC	I	Switches coefficient banks for the tracking filter
69	EFM	I	Input pin for the EFM signal
70	HOLD	I	Input pin for the hold control signal
71	RFOK	I	Input pin for the RFOK signal
72	MIRR	I	Input pin for the MIRR signal
73	A.GND		GND for the analog circuit
74,75	VR2,1	I	The signal input through these pins is digitized to 8-bit by the A/D converter, which by operation of the assigned register, can be read into the microcomputer
76	FE	I	Inputs a focus-error signal from the RF amplifier
77	TE	I	Inputs a tracking-error signal from the RF amplifier
78	TEC	I	Input pin for the tracking comparator
79	REFOUT	O	Output point for midpoint potential for the A/D converter for the LSI portion
80	A.VDD		Supplies current of accurate voltage to the analog circuit

*UPD63702GF

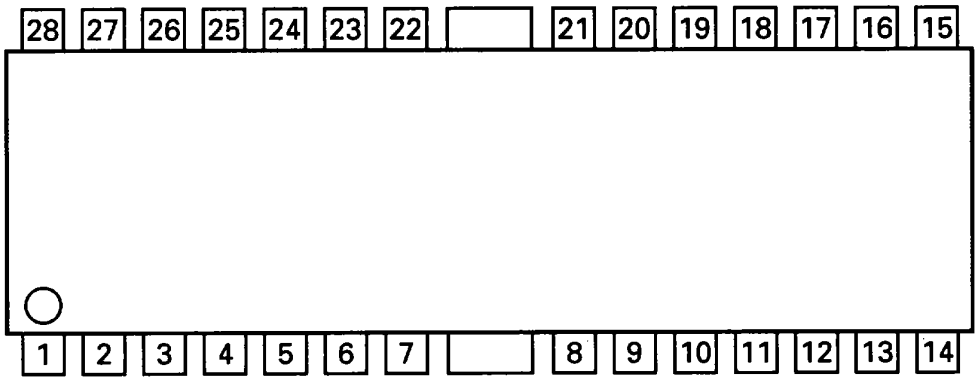


IC's marked by are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

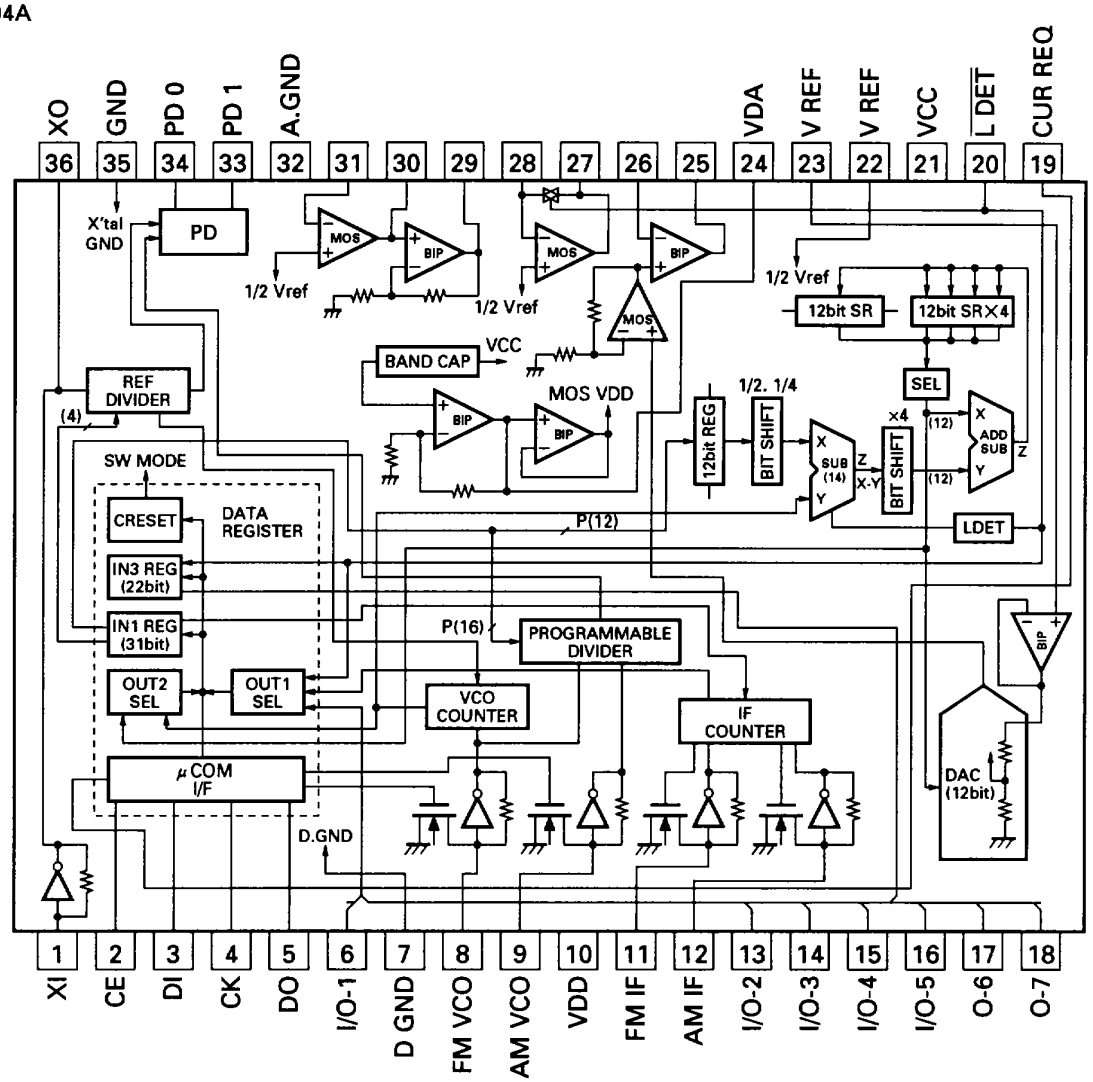
● **Pin Functions (XLA6997FP)**

Pin No.	Pin Name	I/O	Function and Operation
1	OUT1-A	O	CH1 driver output
2	OUT1-B	O	CH1 driver output
3	IN1	I	CH1 input
4	IN1'	I	CH1 gain adjustment input
5	REG-B		PowTr base connection pin for regulator
6	REG OUT	O	Regulator output PowTr collector connection
7	REG GND		Regulator GND/Common circuit GND
8	BIAS	I	BIAS input
9	MUTE		Mute control pin
10	REG SW		Regulator switch pin
11	TEMP MON		Humidity monitor pin
12	IN2	I	CH2 input
13	OUT2-B	O	CH2 driver output
14	OUT2-A	O	CH2 driver output
15	GND		GND
16	OUT3-A	O	CH3 driver output
17	OUT3-B	O	CH3 driver output
18	IN3''		CH3 gain adjustment pin
19	IN3'		CH3 gain adjustment pin
20	IN3	I	CH3 input
21,22	VCC		VCC
23	IN4	I	CH4 input
24	IN4'		CH4 gain adjustment pin
25	IN4''		CH4 gain adjustment pin
26	OUT4-B	O	CH4 driver output
27	OUT4-A	O	CH4 driver output
28	GND		GND

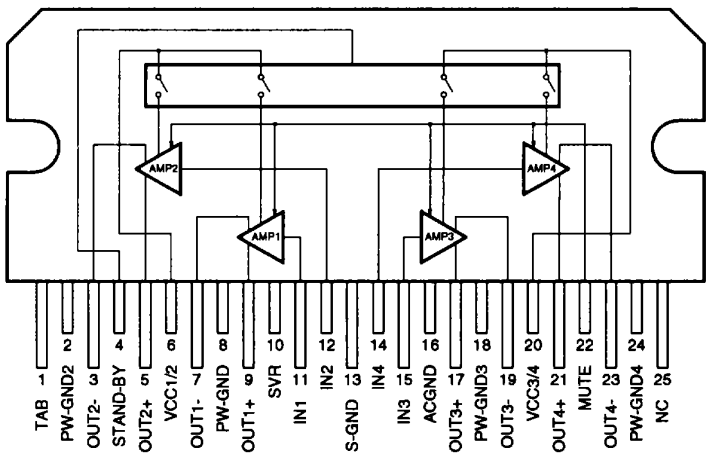
XLA6997FP



*PM2004A



PAL003A

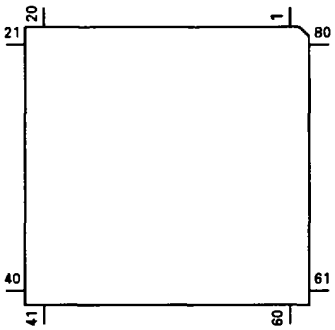


● **Pin Functions (PD4639A)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1	MODEL1	I		Model select input
2	SLIN	I		RDS signal level input
3	NL	I		RDS noise level input
4	AVSS			GND
5	ST	I		FM stereo input
6	SD	I		SD input
7	AVREF1			A/D converter reference voltage
8	KYDT	I		Key data input
9	DPDT	O	C	Display data output
10	MDSENS	I		Modulation detect input
11	PDI	I		Data input from PLL IC
12	PDO	O	C	Data output for PLL IC
13	$\overline{PCK}$	O	C	Serial clock output for PLL IC
14	PCE	O	C	Chip enable output for PLL IC
15	$\overline{CURRQ}$	O	C	Tuner voltage FIX output
16	XSI	I		Data input from CD mechanism module LSI
17	XSO	O	C	Data output for CD mechanism module LSI
18	$\overline{XSCK}$	O	C	Clock output for CD mechanism module LSI
19	$\overline{DRST}$	O	C	RDS decoder reset output
20	AM	O	C	AM power control output
21	FM	O	C	FM power control output
22	VDCONT	O	C	VD control output
23	CONT	O	C	Servo driver power supply control
24	XAO	O	C	Command/Data output for CD mechanism module LSI
25	$\overline{XRST}$	O	C	Reset output for CD mechanism module LSI
26	$\overline{XSTB}$	O	C	Strobe output for CD mechanism module LSI
27	$\overline{CLAMP}$	I		Disc clamp sense input
28	MIRR	I		Mirror detector input
29	FOK	I		Focus OK signal input
30	LOCK	I		Spindle lock detector input
31	CDLOAD	O	C	Load motor loading control output
32	NC			Not used
33	VSS			GND
34	CDEJET	O	C	Load motor eject control output
35	CD5VON	O	C	CD +5V power supply control output
36	$\overline{DLED}$	O	N	Alarm LED output
37,38	MODEL2,3	I		Model select input
39	NC			Not used
40	MUTCNT	I		Not used
41	SWVDD	O	C	Grille power supply control output
42	SYSPW	O	C	System power supply control output
43	ILMPW	O	C	Illumination power supply control output
44	MUTE	O	C	System mute output
45	PEE	O	C	Beep tone output
46	DOORH	O	C	Door system select output
47	DRSENS	I		Door open/close sense input
48	CORR	O	C	Error output
49	VST	O	C	Strobe pulse output for electronic volume
50	VCK	O	C	Clock output for electronic volume
51	VDT	O	C	Data output for electronic volume
52	$\overline{TMUTE}$	O	C	Tuner mute output
53	RECIVE	O	C	During RDS data reception output
54	ERROR	O	C	Disapprove of error correction output
55	DRELAY	O	C	External relay output
56	NC			Not used
57	LPFSW	O	C	Output for FIE
58	$\overline{RDSLK}$	I		RDS LK signal input
59	RDT	I		RDS detected data input

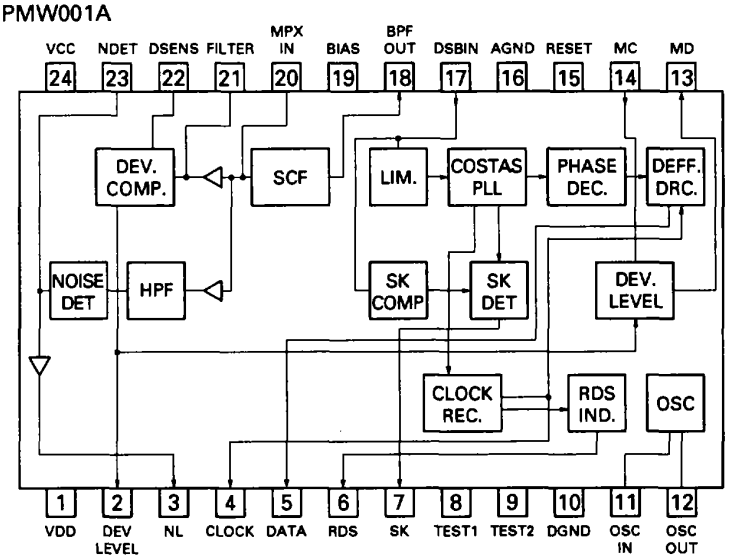
Pin No.	Pin Name	I/O	Format	Function and Operation
60	$\overline{\text{RESET}}$	I		Reset input
61	$\overline{\text{LDET}}$	I		PLL lock sense input
62	RCK	I		RDS demodulation clock input
63	$\overline{\text{ASENS}}$	I		ACC power sense input
64	$\overline{\text{BSENS}}$	I		Back up power sense input
65	$\overline{\text{DSENS}}$	I		Grille detach sense
66	CLKIN	I		Clock input
67	L/S	O	C	RDS fuzzy control output
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1			Crystal oscillator connection pin
71	IC			Connect to GND
72	XT2			Not used
73	TESTIN	I		Test program mode input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0			A/D converter reference voltage
76	SL	I		SD level input from tuner
77	TEMP	I		Temperature detect input
78	VDSENS	I		VD power supply short detection input
79	DSCSNC	I		Disc sense input
80	EJTSNC	I		Disc eject position sense input

*PD4639A



Format	Meaning
C	C MOS
N	N channel open drain

*PMW001A

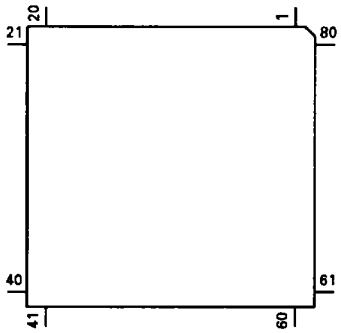


● **Pin Functions (PDR027A)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1	MODEL1	I		Model select input
2,3	NC			Not used
4	AVSS			GND
5	ST	I		FM stereo input
6	SD	I		SD input
7	AVREF1			A/D converter reference voltage
8	KYDT	I		Key data input
9	DPDT	O	C	Display data output
10	NC			Not used
11	PDI	I		Data input from PLL IC
12	PDO	O	C	Data output for PLL IC
13	$\overline{\text{PCK}}$	O	C	Serial clock output for PLL IC
14	PCE	O	C	Chip enable output for PLL IC
15	$\overline{\text{CURRQ}}$	O	C	Tuner voltage FIX output
16	XSI	I		Data input from CD mechanism module LSI
17	XSO	O	C	Data output for CD mechanism module LSI
18	$\overline{\text{XSCK}}$	O	C	Clock output for CD mechanism module LSI
19	NC			Not used
20	AM	O	C	AM power control output
21	FM	O	C	FM power control output
22	VDCONT	O	C	VD control output
23	CONT	O	C	Servo driver power supply control
24	XAO	O	C	Command/Data output for CD mechanism module LSI
25	$\overline{\text{XRST}}$	O	C	Reset output for CD mechanism module LSI
26	$\overline{\text{XSTB}}$	O	C	Strobe output for CD mechanism module LSI
27	$\overline{\text{CLAMP}}$	I		Disc clamp sense input
28	MIRR	I		Mirror detector input
29	FOK	I		Focus OK signal input
30	LOCK	I		Spindle lock detector input
31	CDLOAD	O	C	Load motor loading control output
32	NC			Not used
33	VSS			GND
34	CDEJET	O	C	Load motor eject control output
35	CD5VON	O	C	CD +5V power supply control output
36	$\overline{\text{DLED}}$	O	N	Alarm LED output
37,38	MODEL2,3	I		Model select input
39,40	NC			Not used
41	SWVDD	O	C	Grille power supply control output
42	SYSPW	O	C	System power supply control output
43	ILMPW	O	C	Illumination power supply control output
44	MUTE	O	C	System mute output
45	PEE	O	C	Beep tone output
46	DOORH	O	C	Door system select output
47	DRSENS	I		Door open/close sense input
48	NC			Not used
49	VST	O	C	Strobe pulse output for electronic volume
50	VCK	O	C	Clock output for electronic volume
51	VDT	O	C	Data output for electronic volume
52–54	NC			Not used
55	DRELAY	O	C	External relay output
56	TUNPW	O	C	Tuner power supply control output
57	LPFSW	O	C	Output for FIE
58,59	NC			Not used
60	$\overline{\text{RESET}}$	I		Reset input
61	$\overline{\text{LDET}}$	I		PLL lock sense input
62	NC			Not used
63	$\overline{\text{ASENS}}$	I		ACC power sense input
64	$\overline{\text{BSENS}}$	I		Back up power sense input

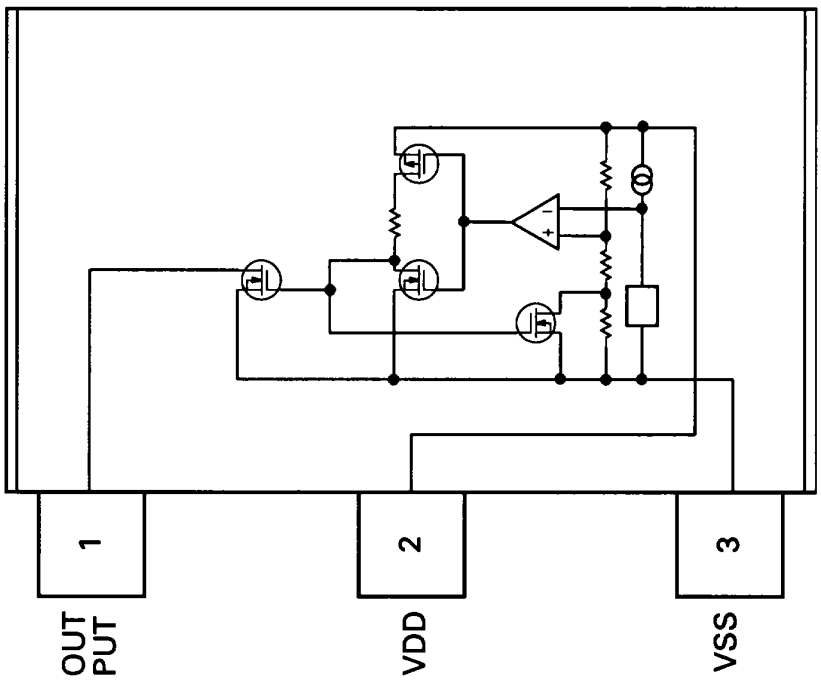
Pin No.	Pin Name	I/O	Format	Function and Operation
65	$\overline{\text{DSENS}}$	I		Grille detach sense
66	CLKIN	I		Clock input
67	NC			Not used
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1			Crystal oscillator connection pin
71	IC			Connect to GND
72	XT2			Not used
73	TESTIN	I		Test program mode input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0			A/D converter reference voltage
76	SL	I		SD level input from tuner
77	TEMP	I		Temperature detect input
78	VDSENS	I		VD power supply short detection input
79	DSCSNC	I		Disc sense input
80	EJTSNC	I		Disc eject position sense input

*PDR027A



Format	Meaning
C	C MOS
N	N channel open drain

*S-80734AN



8. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/OSOOOJ,RS1/OOSOOOJ

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

=====Circuit Symbol & No. Part Name=====	Part No.
Unit Number : CWM4483	
Unit Name : Tuner Amp Unit(DEH-625R/EW)	
MISCELLANEOUS	
IC 451	SN761025DL
IC 501	PM2004A
IC 551	PAL003A
IC 601	PD4639A
IC 602	S-80734AN
IC 701	PMW001A
Q 411	2SC2458
Q 413 414	2SD1468S
Q 421 431 432	FMG3A
Q 423 441	DTA124ES
Q 501 631 953 971 972	2SC2458
Q 502	DTC114ES
Q 551	DTC144ES
Q 632 992	FMC2A
Q 641	DTC114ES
Q 651	2SA1048
Q 653	2SB1236
Q 654 952	DTC124ES
Q 701	2SC2712
Q 951	2SB1243
Q 973	2SD1859
Q 981 991	2SD2396
Q 982 983	2SA1674
Q 984	FMG1A
D 411 702	1SS133
D 503 601 954 955	1SS133
D 631 632 951 952 961 962	1SR139-200
D 633 LED	BR4361F
D 657	HZS6LB2
D 658 659 660	MA153
D 701	MTZ5R1JB
D 953	HZS9LA2
D 971	HZS7LC3
D 972	HZS7LC2
D 973	1SR139-200
D 974	HZS6LB1
D 981	HZS9LB3
D 992	HZS9LB1
L 501 Ferri-Inductor	LAU220K
L 502 601 Ferri-Inductor	LAU2R2K
L 503 631 Ferri-Inductor	LAU2R2K
L 602 Ferri-Inductor	LAU101K
L 651 Ferri-Inductor	LAU101K
L 701 Ferri-Inductor	LAU101K
L 702 Inductor	LCTB2R2K2125
TH 601 Thermistor	CCX1031
X 501 Crystal Resonator 7.2MHz	CSS1379
X 601 Ceramic Resonator 4.19MHz	CSS1047
X 701 Crystal Resonator 4.332MHz	CSS1056
VR 701 Semi-fixed 22kΩ(B)	CCP1208

=====Circuit Symbol & No. Part Name=====	Part No.
FM/AM Tuner Unit	CWE1416
EF 951	CCG1003
BZ 601	CPV1011
RESISTORS	
R 411	RS1/10S105J
R 412 526	RD1/4PU472J
R 413 415 416	RS1/10S224J
R 417 418	RS1/10S223J
R 419 420	RS1/10S222J
R 421 422	RS1/10S104J
R 431	RS1/8S471J
R 432	RS1/10S471J
R 433 434 478 691 693 711 712 713	RS1/10S102J
R 435 436 437 438 473	RS1/10S223J
R 443 444	RD1/4PU222J
R 445 446 459 460 633	RS1/10S272J
R 461 462	RS1/10S151J
R 463 464	RS1/10S101J
R 474 477 523 571 580 954 955 972 975	RS1/10S103J
R 475 476	RD1/4PU471J
R 502 511 657 668	RS1/10S222J
R 503 608 609 610 651 652	RD1/4PU472J
R 504	RD1/4PU223J
R 506 537 539 624 625 626	RS1/10S0R0J
R 507	RS1/8S473J
R 508	RS1/10S102J
R 509	RS1/10S472J
R 513 528 664 951 978 983 993	RS1/10S472J
R 514 607 659 956 971 973 974 976	RS1/10S473J
R 515 516 518	RD1/4PU681J
R 517	RD1/4PU681J
R 519 520	RS1/10S392J
R 521	RS1/10S152J
R 522	RS1/10S682J
R 524	RS1/10S561J
R 525	RD1/4PU272J
R 527	RS1/10S682J
R 529	RS1/10S681J
R 530	RS1/10S222J
R 531	RS1/10S103J
R 532	RS1/10S224J
R 533	RS1/8S473J
R 534 605 665 707 710 958 985 986	RD1/4PU102J
R 536	RS1/8S102J
R 538	RS1/10S332J
R 570	RS1/8S103J
R 579	RS1/10S331J
R 581 582 584 642	RD1/4PU102J
R 583	RS1/10S562J

=====Circuit Symbol & No. Part Name=====	Part No.
R 601	RN1/10SE223 D
R 602	RD1/4PU104J
R 603	RS1/10S912J
R 604	RS1/10S393J
R 606	RS1/10S124J
R 621 622 638 639	RD1/4PU473J
R 630	RD1/4PU473J
R 631	RD1/4PU103J
R 632	RS1/8S223J
R 634 952 953	RD1/4PU331J
R 641	RS1/10S202J
R 653 654 655 681 683 684	RD1/4PU222J
R 656	RD1/4PU472J
R 658	RS1/8S222J
R 661 981	RS1/10S1R0J
R 682	RD1/4PU222J
R 688	RD1/4PU681J
R 692	RS1/8S102J
R 701	RS1/8S102J
R 702	RD1/4PU221J
R 703	RS1/8S103J
R 704	RS1/10S0R0J
R 706	RS1/10S0R0J
R 709	RS1/10S333J
R 714	RS1/10S102J
R 715	RS1/8S562J
R 716	RS1/8S104J
R 717	RS1/10S104J
R 977	RS1/10S101J
R 982	RD1/4PU471J
R 984	RS1/8S472 J
R 987	RS1/10S221J
R 991 992	RD1/4PU221J
R 994	RS1/10S122J

CAPACITORS

C 411	CKSQYB471K50
C 412	CKSQYB473K50
C 421 422	CEA3R3M50LL
C 431 432 433 434 457 458 463 464 473 570	CEA100M16LL
C 435 436 437 438 711 712	CCSQCH220J50
C 441 442	CEA010M50LL
C 443	CKSQYB223K25
C 444	CKSQYB223K50
C 445 446 447	CKSQYB102K50
C 451 452 469 470 474 490 607	CEA2R2M50LL
C 453 454 604 708	CEA4R7M35LL
C 455	CKSYF104Z25
C 456	CKSQYF104Z25
C 459 460	CKSQYB822K50
C 461 462 572 574	CEA010M50LL
C 465 466	CKSQYB152K50
C 467 468	CCSQCH101J50
C 471 472	CKSQYB333K25
C 477 482 713	CKSQYB104K50
C 478 501 508 517 519 527 529 590 703	CKSQYB103K50
C 481	CEA470M10LL
C 483 484	CKSQYB183K25
C 485 486 507 513 992	CKSQYB102K50
C 502 503 515 535	CKSQYB223K50
C 504 651 972 974 991	CKSQYB473K50
C 505	CCSCH101J50
C 506	CKSYB103K50
C 510 512	CEA220M10LL
C 516 4.7µF/16V	CCH1165
C 518 4.7µF/16V	CCH1165

=====Circuit Symbol & No. Part Name=====	Part No.
C 520	CKLSR473K16
C 521	CEASR47M50
C 522 591	CEA220M10LL
C 523	CKSQYB104K50
C 524 525	CCSQCH150J50
C 526	CKSYB332K50
C 530 536	CKSQYB103K50
C 531	CCSQCH101J50
C 532	CKSQYB103K50
C 539	CKSQYB473K50
C 551 553 554	CEAR22M50LL
C 552	CEAR22M50LL
C 556 3300µF/16V	CCH1150
C 571	CEA330M10LL
C 573	CKSYB104K50
C 605	CCSQCH101J50
C 606	CKSQYB473K50
C 652	CEA4R7M35LL
C 701	CKSYB105K16
C 704	CKSQYB222K50
C 705	CKSYB104K50
C 706	CKSQYB472K50
C 707	CKSQYB104K50
C 709	CEA4R7M35LL
C 710	CKSQYB223K50
C 714	CKSYB104K25
C 715	CKSQYB223K50
C 971 470µF/16V	CCH-114
C 973	CEA101M10LL
C 981	CEAS331M10
C 982	CKSQYB103K50
C 983	CEA101M16LL
C 993	CEA101M10LS

Unit Number : CWM4605
Unit Name : Key Board Unit(DEH-625R/EW)

MISCELLANEOUS

IC 901		PD6122A
IC 902		RPM-678CBR
D 901 902		DA204K
D 903		MA3051M
L 901	Inductor	LCTB4R7K3216
X 901	Ceramic Resonator 4.97MHz	CSS1312
IL 901 902 903 904	Lamp 14V 40mA	CEL1341
IL 905	Lamp 14V 40mA	CEL1341
	LCD	CAW1350

RESISTORS

R 901 902 903	RS1/8S222J
R 906	RS1/10S470J
R 907 910	RS1/10S0R0J
R 911 912 913 914	RS1/10S471J

CAPACITORS

C 901 902 903 904	CKSQYB103K50
C 905	CEA470M6R3LS
C 906	CKSQYB473K50

Unit Number : CWE1416
Unit Name : FM/AM Tuner Unit(Except for DEH-424R/GR)

MISCELLANEOUS

IC 1	PA4023A
IC 2	PA4024A
Q 1 31 165 202	2SC2412KLN
Q 2 154 203	DTC124EU
Q 3	3SK263

Circuit Symbol & No.	Part Name	Part No.
Q 201		2SK932
D 4		1SV251
D 5 7 8		KV1410
D 6 201 202		MA157
D 231		SVC253
L 2 4		CTC1108
L 3	Inductor	LCTB2R2K2125
L 5		CTC1107
L 6	Inductor	LCTBR15K1608
L 51	Ferri-Inductor	LAU150K
L 201	Ferri-Inductor	LAU4R7K
L 202	Ferri-Inductor	LAU330K
L 203	Inductor	CTF1287
L 208	Inductor	LAU121K
L 231	Inductor	LAU3R3J
T 31	Coil	CTE1116
T 51	Coil	CTC1136
TC 1	Trimmer	CCL1042
CF 51 52 53	Ceramic Filter	CTF1292
CF 232	Ceramic Filter	CTF1348
X 151	Ceramic Resonator 920.5kHz	CSS1365
X 231	Crystal Resonator 10.26MHz	CSS1111
VR 154	Semi-fixed 68kΩ(B)	CCP1211
AR 1	Capacitor with Discharge Gap	DSP-201M

RESISTORS

R 1	RS1/16S0R0J
R 4	RS1/16S154J
R 5	RS1/16S391J
R 6 10 202	RS1/16S223J
R 7 243 247	RS1/16S123J
R 8 17	RS1/16S332J
R 9	RS1/16S473J
R 11	RS1/16S124J
R 13	RS1/16S563J
R 15	RS1/16S271J
R 16	RS1/16S104J
R 18	RS1/16S332J
R 31	RS1/16S470J
R 32 215	RS1/16S822J
R 33	RS1/16S822J
R 34 35	RS1/16S331J
R 51	RS1/16S271J
R 52	RS1/16S560J
R 55	RS1/16S102J
R 56	RS1/16S823J
R 61	RS1/16S392J
R 62 152	RS1/16S393J
R 101	RS1/16S272J
R 102	RS1/16S682J
R 103	RS1/16S333J
R 104	RS1/16S334J
R 105	RS1/16S683J
R 107	RS1/16S222J
R 151	RS1/16S222J
R 154 239	RS1/16S104J
R 155	RS1/16S273J
R 156	RS1/16S243J
R 157	RS1/16S203J
R 160	RS1/16S222J
R 161	RS1/16S563J
R 162	RS1/16S105J
R 163	RS1/16S222J
R 203	RS1/16S225J
R 204	RS1/16S103J
R 206	RS1/16S220J
R 207	RS1/16S101J
R 208 217	RS1/16S102J
R 209	RS1/16S471J
R 214	RS1/16S822J
R 231	RS1/16S272J
R 232	RS1/16S473J
R 237	RS1/16S103J
R 238	RS1/16S104J
R 240	RS1/16S332J
R 241	RS1/16S202J
R 244	RS1/16S103J

CAPACITORS

C 1	CCSQCH060D50
C 2	CCSRCH020C50
C 4	CCSRCH820J50
C 6	CCSRCH820J50
C 8 18 25 31 52 59 62 105 107 213	CKSRYB103K25
C 9 34 56 152 160 241	CKSQYB104K16
C 10	CCSRCH0R5C50
C 11	CEA010M50LL
C 12 13 17 19 20	CKSRYB222K50
C 14	CCSRCH220J50
C 16	CCSRCH080D50
C 21	CEA100M16LL
C 22	CCSRTH090D50
C 23	CCSRTH120J50
C 24	CCSRCH471J50
C 32	CKSQYB472K50
C 33	CCSRCH050C50
C 36	CCSRRH201J50
C 51	CKSRYB223K25
C 54	CCSRCH470J50
C 55	CKSQYB223K25
C 57	CKSRYB472K50
C 58 234	CEA330M10LL
C 61	CCSRCH270J50
C 63	CEAR15M50LL
C 101	CEA100M10NPLL
C 102	CKSRYB182K50
C 103	CKSRYB682K25
C 104	CEA2R2M50LL
C 106	CCSRCH151J50
C 151	CKSRYB472K50
C 153 157	CEA3R3M50LL
C 154	CKSQYB104K16
C 158	CKSYB474K16
C 159	CEA220M6R3LL
C 161 209	CKSQYB104K16
C 162	CEA3R3M50LL
C 163	CKSRYB102K50
C 170 202	CCSRCH100D50
C 201 250	CCSRCH471J50
C 203 235	CKSRYB332K50
C 204 205 236 244	CKSQYB473K16
C 206 233	CKSQYB104K16
C 207	CCSRCH560J50
C 211	CCSRCH101J50
C 212	CEA470M6R3LL
C 216	CCSRCH101J50
C 217	CEA1R5M50LL
C 219	CCSRCH471J50
C 220 230	CKSRYB103K25
C 231	CCSRCH330J50
C 232	CCSRCH150J50
C 237	CCSRCH180J50
C 239	CKSRYB472K50
C 240 242	CEAR47M50LL

=====Circuit Symbol & No.	Part Name=====	Part No.
C 243		CEAR33M50LL
C 245		CKSRYB123K25
C 246		CKSQYB473K16
Unit Number : CWE1420		
Unit Name : FM/AM Tuner Unit(DEH-424R/GR)		
MISCELLANEOUS		
IC 1		PA4023A
IC 2		PA4024A
Q 1 31 165		2SC2412KLN
Q 2 154		DTC124EU
Q 3		3SK263
D 4		1SV251
D 5 7 8		KV1410
D 6		MA157
L 2 4		CTC1108
L 3	Inductor	LCTB2R2K2125
L 5		CTC1107
L 6	Inductor	LCTBR15K1608
L 51	Ferri-Inductor	LAU150K
T 31	Coil	CTE1116
T 51	Coil	CTC1136
TC 1	Trimmer	CCL1042
CF 51 52 53	Ceramic Filter	CTF1292
X 151	Ceramic Resonator 920.5kHz	CSS1365
X 231	Crystal Resonator 10.26MHz	CSS1111
VR 154	Semi-fixed 68kΩ(B)	CCP1211
AR 1	Capacitor with Discharge Gap	DSP-201M
RESISTORS		
R 1		RS1/16S0R0J
R 4		RS1/16S154J
R 5		RS1/16S391J
R 6 10 202		RS1/16S223J
R 7 247		RS1/16S123J
R 8 17		RS1/16S332J
R 9		RS1/16S473J
R 11		RS1/16S124J
R 13		RS1/16S563J
R 15		RS1/16S271J
R 16		RS1/16S104J
R 18		RS1/16S332J
R 31		RS1/16S470J
R 32 215		RS1/16S822J
R 33		RS1/16S822J
R 34 35		RS1/16S331J
R 51		RS1/16S271J
R 52		RS1/16S560J
R 55		RS1/16S102J
R 56		RS1/16S823J
R 61		RS1/16S392J
R 62 152		RS1/16S393J
R 101		RS1/16S272J
R 102		RS1/16S682J
R 103		RS1/16S333J
R 104		RS1/16S334J
R 105		RS1/16S683J
R 107		RS1/16S222J
R 151		RS1/16S222J
R 154		RS1/16S104J
R 155		RS1/16S273J
R 156		RS1/16S243J
R 157		RS1/16S203J
R 160		RS1/16S222J
R 161		RS1/16S563J

=====Circuit Symbol & No.	Part Name=====	Part No.
R 162		RS1/16S105J
R 163		RS1/16S222J
R 203		RS1/16S225J
R 204		RS1/16S103J
R 206		RS1/16S220J
R 207		RS1/16S101J
R 208 217		RS1/16S102J
R 214		RS1/16S822J
R 231		RS1/16S272J
R 237		RS1/16S103J
R 238		RS1/16S104J
R 240		RS1/16S332J
R 241		RS1/16S202J
CAPACITORS		
C 1		CCSQCH060D50
C 2		CCSRCH020C50
C 4		CCSRCH820J50
C 6		CCSRCH820J50
C 8 18 25 31 52 59 62 105 107		CKSRYB103K25
C 9 34 56 152 160		CKSQYB104K16
C 10		CCSRCH0R5C50
C 11		CEA010M50LL
C 12 13 17 19 20		CKSRYB222K50
C 14		CCSRCH220J50
C 16		CCSRCH080D50
C 21		CEA100M16LL
C 22		CCSRTH090D50
C 23		CCSRTH120J50
C 24		CCSRCH471J50
C 32		CKSQYB472K50
C 33		CCSRCH050C50
C 36		CCSRRH201J50
C 51		CKSRYB223K25
C 54		CCSRCH470J50
C 55		CKSQYB223K25
C 57		CKSRYB472K50
C 58		CEA330M10LL
C 61		CCSRCH270J50
C 63		CEAR15M50LL
C 101		CEA100M10NPLL
C 102		CKSRYB182K50
C 103		CKSRYB682K25
C 104		CEA2R2M50LL
C 106		CCSRCH151J50
C 151		CKSRYB472K50
C 153 157		CEA3R3M50LL
C 154		CKSQYB104K16
C 158		CKSYB474K16
C 159		CEA220M6R3LL
C 161		CKSQYB104K16
C 162		CEA3R3M50LL
C 163		CKSRYB102K50
C 170		CCSRCH100D50
C 207		CCSRCH560J50
Unit Number : CWX1889		
Unit Name : Control Unit		
MISCELLANEOUS		
IC 101		UPC2572GS
IC 201		UPD63702GF
IC 301		XLA6997FP
IC 302		XRA6285FP
IC 601		TA2063F

=====Circuit Symbol & No.	Part Name=====	Part No.
IC 701		PQ05TZ51
Q 101		2SD1664
Q 102		UMD2N
Q 601 602		2SD1781K
Q 603		2SB709A
D 601		MA151WA
D 701 702		1SR154-400
D 801 802	LED	CL200IRX
X 201	Ceramic Resonator 16.93MHz	CSS1363
S 801 802	Switch(Home, Clamp)	CSN1028
RESISTORS		
R 101		RS1/8S100J
R 102		RS1/8S120J
R 103		RS1/16S102J
R 104		RS1/16S822J
R 105		RS1/16S682J
R 106		RS1/16S183J
R 107		RS1/16S822J
R 108		RS1/16S333J
R 109		RS1/16S683J
R 110		RS1/16S134J
R 111		RS1/16S273J
R 112		RS1/16S222J
R 113 114 607		RS1/16S103J
R 115		RS1/16S102J
R 116 117		RS1/16S163J
R 201		RS1/16S104J
R 202		RS1/16S473J
R 304 501		RS1/16S0R0J
R 505		RS1/16S102J
R 507		RA4C102J
R 508		RA4C681J
R 510		RS1/10S0R0J
R 601 602		RS1/16S102J
R 603 604		RS1/16S223J
R 605 606		RS1/16S162J
R 801 802		RS1/8S751J
CAPACITORS		
C 101 601 703		CEV101M6R3
C 102		CKSQYB104K16
C 103		CEV470M6R3
C 104		CKSYB334K16
C 105		CCSRCH330J50

=====Circuit Symbol & No.	Part Name=====	Part No.
C 106 304		CKSRYB103K25
C 107 603 604		CEV4R7M35
C 108		CKSQYB273K50
C 109		CCSRCH101J50
C 110 202		CKSQYB104K16
C 111		CKSRYB332K50
C 112		CKSQYB473K16
C 113		CKSRYB103K25
C 114		CKSRYB391K50
C 115		CCSRCH121J50
C 116		CKSRYB682K25
C 117		CKSRYB333K16
C 118 201		CKSYB334K16
C 119		CKSYB334K16
C 120 121 702		CKSYB334K16
C 122 124		CKSQYB104K16
C 123		CKSRYB472K50
C 125		CCSRCH060D50
C 126		CKSRYB153K25
C 127		CCSRCH102J25
C 203		CKSQYB104K16
C 303		CEV470M16
C 305 306		CKSRYB103K25
C 502		CKSRYB471K50
C 602		CKSQYB104K16
C 605 606		CKSRYB152K50
C 607		CEV220M6R3
C 701	22μF/6.3V	CCH1233
C 901 903		CCSRCH471J50
C 902		CCSRCH271J50
C 904		CCSRCH101J50
Unit Number :		
Unit Name : Detector P.C.Board		
Q 1 2	Photo Transistor	CPT-230S-X
Miscellaneous Parts List		
	PU Unit	CGY1070
M 1	Motor Unit(Spindle)	CXA9100
M 2	CRG Motor Unit(Carriage)	CXA8986
M 3	Load Motor Unit(Loading)	CXA8702

● The DEH-624R/EW, DEH-525R/EW, DEH-524R/EW, DEH-424R/GR, DEH-424/EW, and DEH-425/IT Parts Lists enumerate the parts which differ from those enumerated in the DEH-625R/EW Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The DEH-625R/EW Parts List is given on page 24.

Key Board Unit

Circuit Symbol & No.	DEH-625R/EW Part No.	DEH-624R/EW Part No.	DEH-525R/EW Part No.	DEH-524R/EW Part No.	DEH-424R/GR Part No.	DEH-424/EW Part No.	DEH-425/IT Part No.
IC902	RPM-678CBR	RPM-678CBR	·····	·····	·····	·····	·····
D903	MA3051M	MA3051L	MA3051M	MA3051L	MA3051L	MA3051L	MA3056L
LCD	CAW1350	CAW1328	CAW1350	CAW1328	CAW1328	CAW1330	CAW1330
IL901-905	CEL1341	CEL1295	CEL1341	CEL1295	CEL1295	CEL1295	CEL1341
R905	·····	·····	RS1/10S470J	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J
R906	RS1/10S470J	RS1/10S470J	·····	·····	·····	·····	·····
R907,910	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	·····	·····
R908,909	·····	·····	·····	·····	·····	RS1/10S0R0J	RS1/10S0R0J
C905	CEA470M6R3LS	CEA470M6R3LS	·····	·····	·····	·····	·····

Tuner Amp Unit

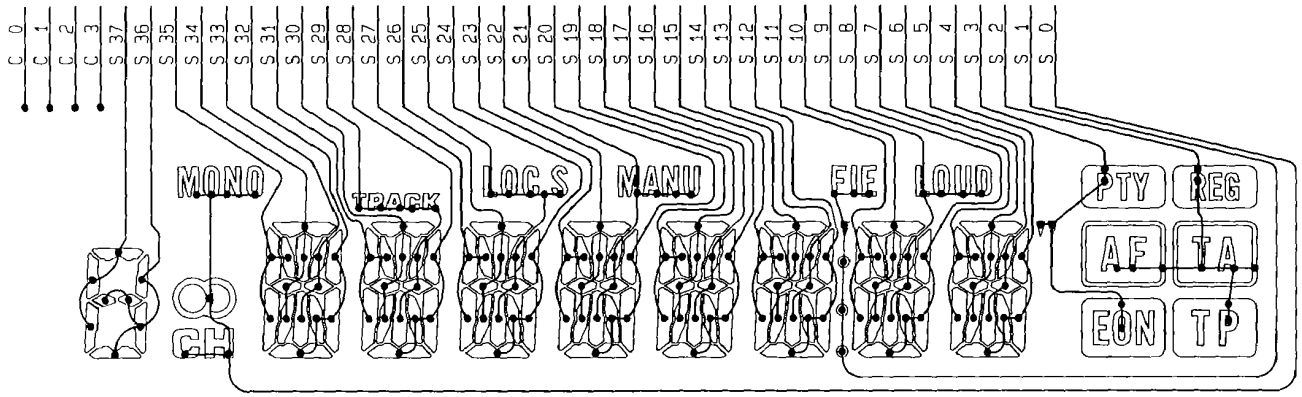
Circuit Symbol & No.	DEH-625R/EW DEH-624R/EW Part No.	DEH-525R/EW DEH-524R/EW Part No.	DEH-424R/GR Part No.	DEH-424/EW DEH-425/IT Part No.
IC601	PD4639A	PD4639A	PD4639A	PDR027A
IC701	PMW001A	PMW001A	PMW001A	·····
Q411	2SC2458	2SC2458	2SC2458	·····
Q413,414	2SD1468S	2SD1468S	2SD1468S	·····
Q421	FMG3A	FMG3A	·····	·····
Q423	DTA124ES	DTA124ES	·····	·····
Q432	FMG3A	·····	·····	·····
Q631	2SC2458	·····	·····	·····
Q632	FMC2A	·····	·····	·····
Q641	DTC114ES	DTC114ES	DTC114ES	·····
Q701	2SC2712	2SC2712	2SC2712	·····
Q983	2SA1674	2SA1674	·····	2SA1674
D411,702	1SS133	1SS133	1SS133	·····
D504	·····	·····	·····	1SS133
D631,632	1SR139-200	·····	·····	·····
D633	BR4361F	·····	·····	·····
D701	MTZ5R1JB	MTZ5R1JB	MTZ5R1JB	·····
BZ601	CPV1011	CPV1011	CPV1011	·····
VR701	CCP1208	CCP1208	CCP1208	·····
X701	CSS1056	CSS1056	CSS1056	·····
L501	LAU220K	LAU220K	·····	LAU220K
L631	LAU2R2K	·····	·····	·····
L701	LAU101K	LAU101K	LAU101K	·····
L702	LCTB2R2K2125	LCTB2R2K2125	LCTB2R2K2125	·····
FM/AM Tuner Unit	CWE1416	CWE1416	CWE1420	CWE1416
R411	RS1/10S105J	RS1/10S105J	RS1/10S105J	·····
R412	RD1/4PU472J	RD1/4PU472J	RD1/4PU472J	·····
R413,415,416	RS1/10S224J	RS1/10S224J	RS1/10S224J	·····
R417,418	RS1/10S223J	RS1/10S223J	RS1/10S223J	·····
R419,420	RS1/10S222J	RS1/10S222J	RS1/10S222J	·····
R421,422	RS1/10S104J	RS1/10S104J	·····	·····
R433,434	RS1/10S102J	·····	·····	·····
R437,438	RS1/10S223J	·····	·····	·····
R441,442	·····	·····	·····	RS1/10S0R0J
R477	RS1/10S103J	·····	·····	·····
R478	RS1/10S102J	·····	·····	·····
R501	·····	·····	·····	RS1/8S102J
R519,520	RS1/10S392J	RS1/10S392J	·····	RS1/10S392J
R521	RS1/10S152J	RS1/10S152J	·····	RS1/10S152J
R523	RS1/10S103J	RS1/10S103J	·····	RS1/10S103J
R533	RS1/8S473J	RS1/8S473J	RS1/8S473J	RS1/8S0R0J
R602	RD1/4PU104J	RD1/4PU912J	RD1/4PU912J	RD1/4PU104J
R603	RS1/10S912J	RS1/10S104J	RS1/10S104J	RS1/10S912J
R625	RS1/10S0R0J	RS1/10S0R0J	·····	·····

Circuit Symbol & No.	DEH-625R/EW DEH-624R/EW Part No.	DEH-524R/EW DEH-525R/EW Part No.	DEH-424R/GR Part No.	DEH-424/IT DEH-425/EW Part No.
R628	·····	·····	RS1/10S473J	RS1/10S473J
R630	RD1/4PU473J	·····	·····	·····
R631	RD1/4PU103J	·····	·····	·····
R632	RS1/8S223J	·····	·····	·····
R633	RS1/10S272J	·····	·····	·····
R634	RD1/4PU331J	·····	·····	·····
R641	RS1/10S202J	RS1/10S202J	RS1/10S202J	·····
R642	RD1/4PU102J	RD1/4PU102J	RD1/4PU102J	·····
R701	RS1/8S102J	RS1/8S102J	RS1/8S102J	·····
R702	RD1/4PU221J	RD1/4PU221J	RD1/4PU221J	·····
R703	RS1/8S103J	RS1/8S103J	RS1/8S103J	·····
R704,706	RS1/10S0R0J	RS1/10S0R0J	RS1/10S0R0J	·····
R707,710	RD1/4PU102J	RD1/4PU102J	RD1/4PU102J	·····
R709	RS1/10S333J	RS1/10S333J	RS1/10S333J	·····
R711,712,713,714	RS1/10S102J	RS1/10S102J	RS1/10S102J	·····
R715	RS1/8S562J	RS1/8S562J	RS1/8S562J	·····
R716	RS1/8S104J	RS1/8S104J	RS1/8S104J	·····
R717	RS1/10S104J	RS1/10S104J	RS1/10S104J	·····
R958	RD1/4PU102J	·····	·····	·····
R984	RS1/8S472J	RS1/8S472J	·····	RS1/8S472J
R986	RD1/4PU102J	RD1/4PU102J	·····	RD1/4PU102J
C411	CKSQYB471K50	CKSQYB471K50	CKSQYB471K50	·····
C412	CKSQYB473K50	CKSQYB473K50	CKSQYB473K50	·····
C421,422	CEA3R3M50LL	CEA3R3M50LL	·····	·····
C433,434	CEA100M16LL	·····	·····	·····
C437,438	CCSQCH220J50	·····	·····	·····
C441,442	CEA010M50LL	CEA010M50LL	CEA010M50LL	·····
C444	CKSQYB223K50	CKSQYB223K50	CKSQYB223K25	CKSQYB223K25
C490	CEA2R2M50LL	·····	·····	·····
C509	·····	·····	·····	CKSQYB223K50
C516	CCH1165	CCH1165	·····	CCH1165
C517	CKSQYB103K50	CKSQYB103K50	·····	CKSQYB103K50
C520	CKLSR473K16	CKLSR473K16	·····	CKLSR473K16
C521	CEASR47M50	CEASR47M50	·····	CEASR47M50
C526	CKSYB332K50	CKSYB332K50	·····	CKSYB332K50
C701	CKSYB105K16	CKSYB105K16	CKSYB105K16	·····
C703	CKSQYB103K50	CKSQYB103K50	CKSQYB103K50	·····
C704	CKSQYB222K50	CKSQYB222K50	CKSQYB222K50	·····
C705	CKSYB104K50	CKSYB104K50	CKSYB104K50	·····
C706	CKSQYB472K50	CKSQYB472K50	CKSQYB472K50	·····
C707,713	CKSQYB104K50	CKSQYB104K50	CKSQYB104K50	·····
C708,709	CEA4R7M35LL	CEA4R7M35LL	CEA4R7M35LL	·····
C710,715	CKSQYB223K50	CKSQYB223K50	CKSQYB223K50	·····
C711,712	CCSQCH220J50	CCSQCH220J50	CCSQCH220J50	·····
C714	CKSYB104K25	CKSYB104K25	CKSYB104K25	·····

9. LCD

- **CAW1350 (DEH-625R/EW, 525R/EW)**
- **CAW1328 (DEH-624R/EW, 524R/EW, 424R/GR)**

SEGMENT



COMMON

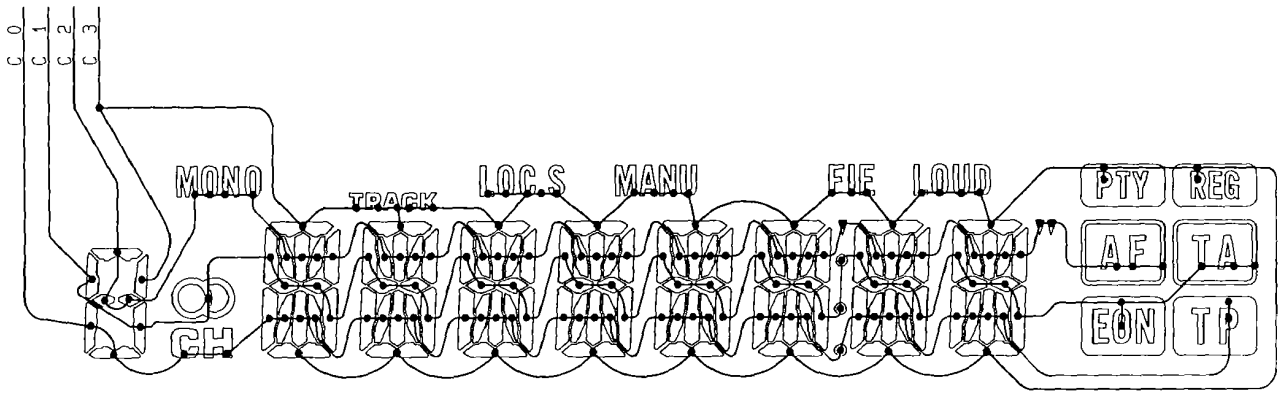
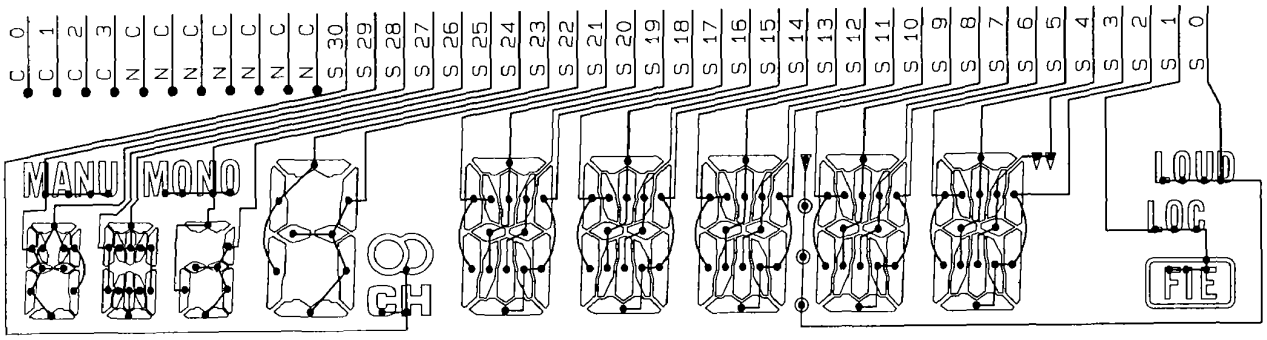


Fig. 4

● **CAW1330 (DEH-424/EW, 425/IT)**

SEGMENT



COMMON

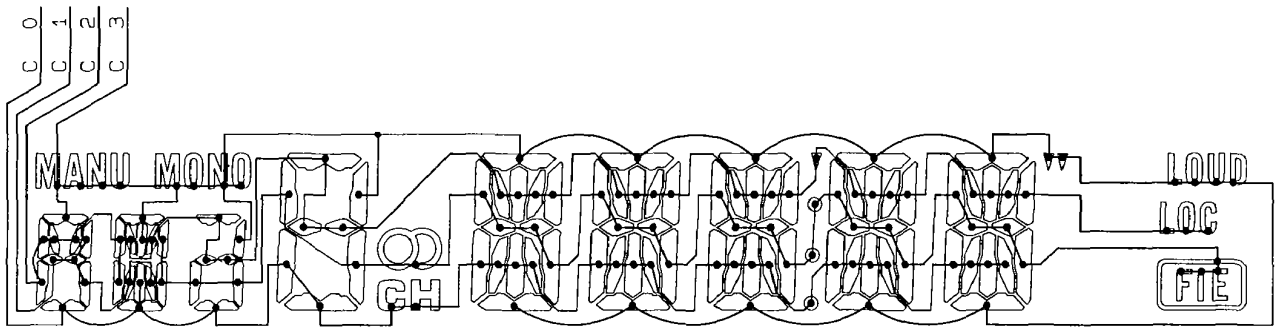


Fig. 5

10. BLOCK DIAGRAM

● **DEH-625R/EW**

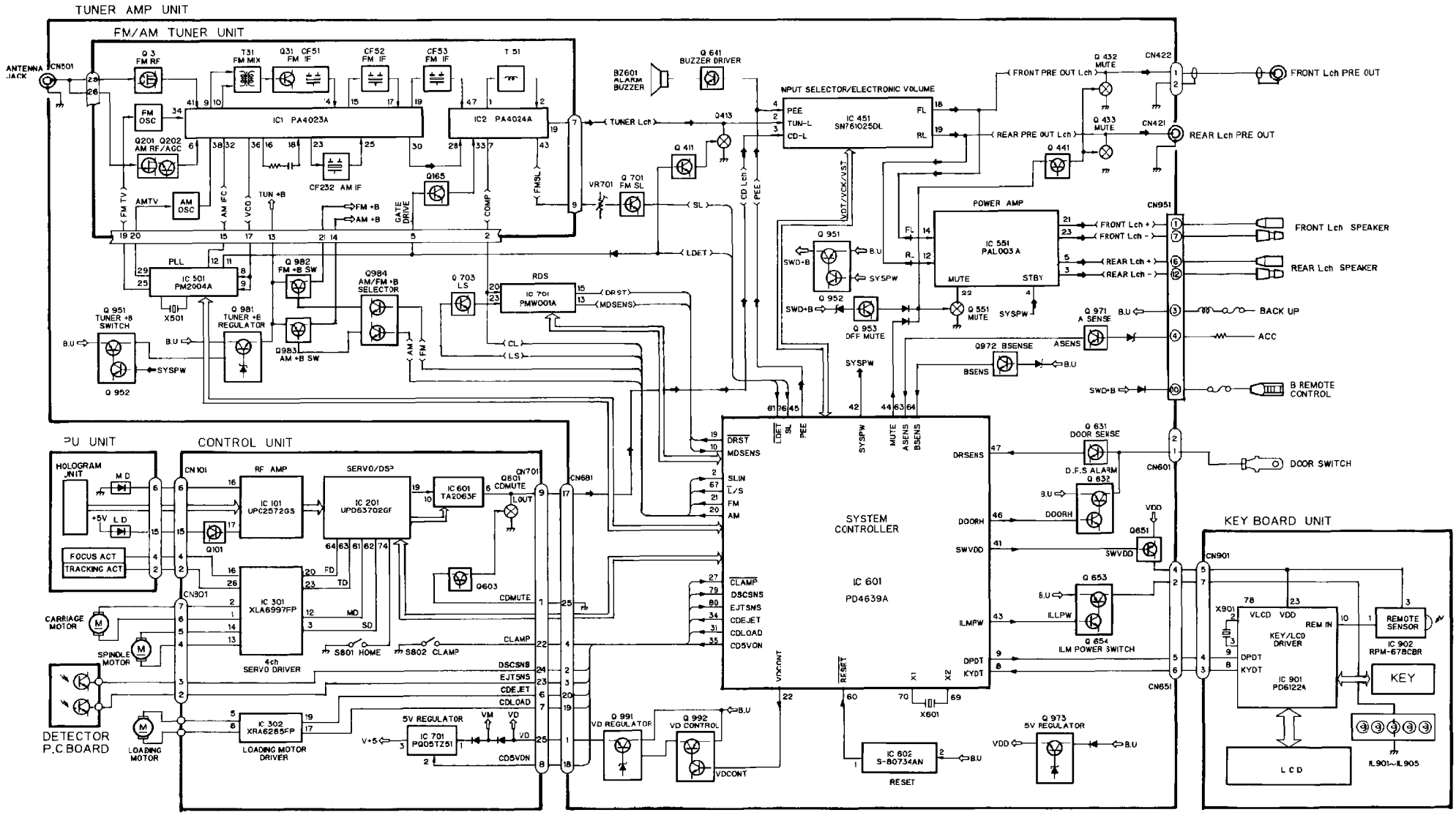
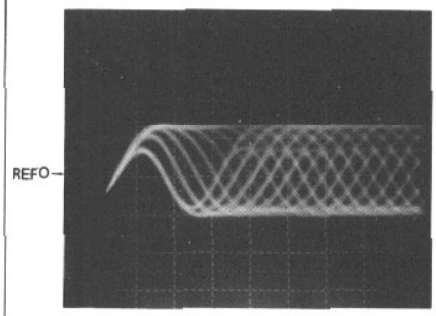


Fig. 6

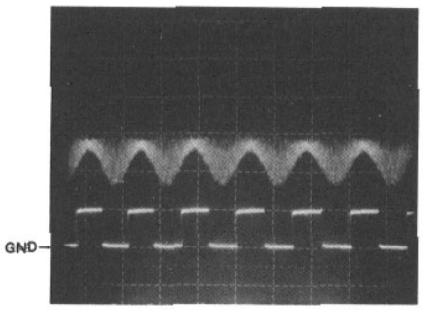
● Waveforms

Note: 1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO: 2.5V

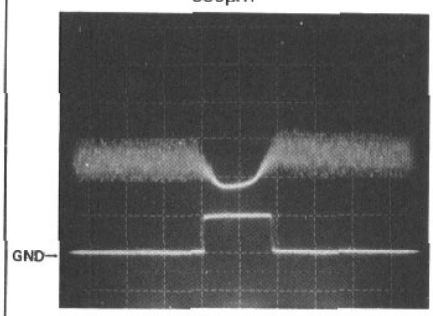
① RFO 0.5V/div. 0.5μs/div.
Normal mode: play



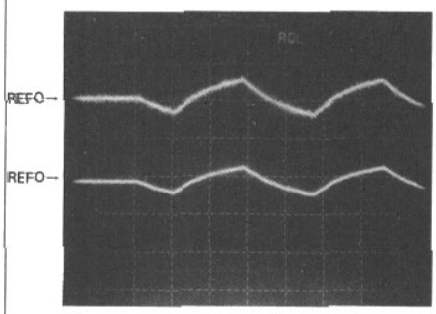
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Test mode: Tracking open



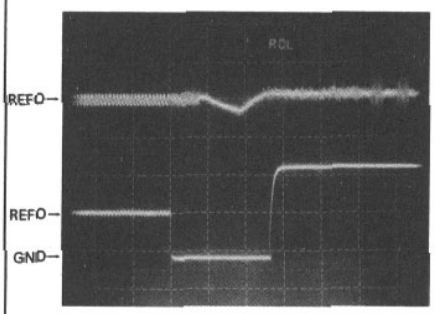
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Normal mode: The defect part passes 800μm



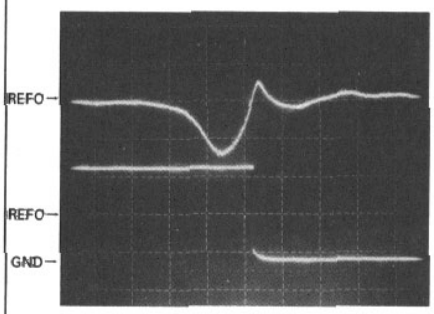
③ CH1: FIN 0.5V/div.
④ CH2: FO+ 2V/div. 0.2s/div.
Test mode: No disc, Focus close



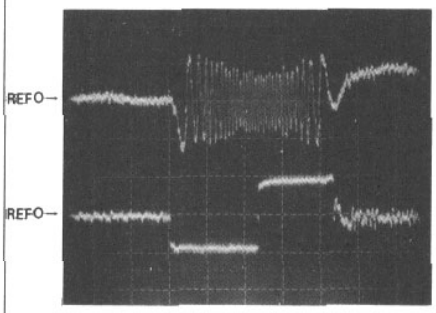
③ CH1: FIN 0.5V/div.
⑤ CH2: FOK 2V/div. 0.2s/div.
Normal mode: Focus close



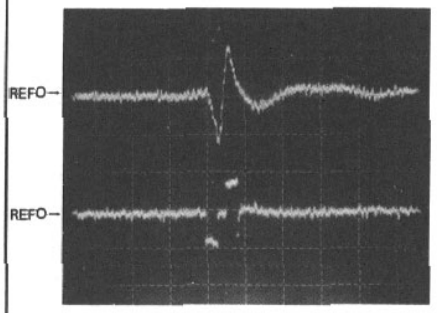
⑥ CH1: FEY 0.5V/div.
⑦ CH2: XSI 2V/div. 1ms/div.
Normal mode: Focus close



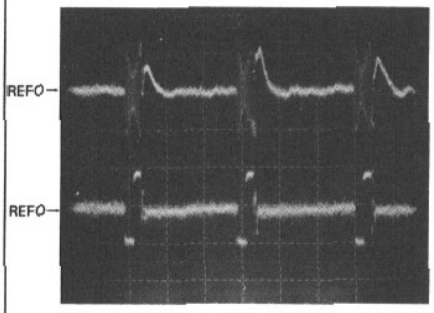
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 0.5ms/div.
Test mode: 32 tracks jump (FWD)



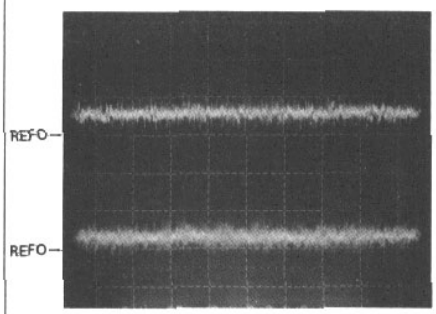
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 0.5ms/div.
Test mode: Single jump (FWD)



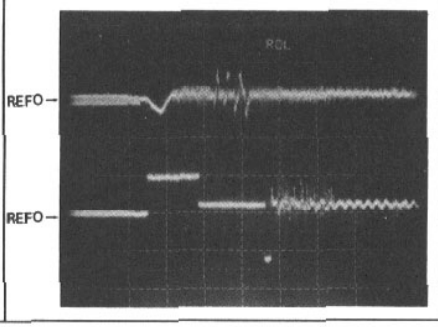
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 5ms/div.
Test mode: 100 tracks jump (FWD)



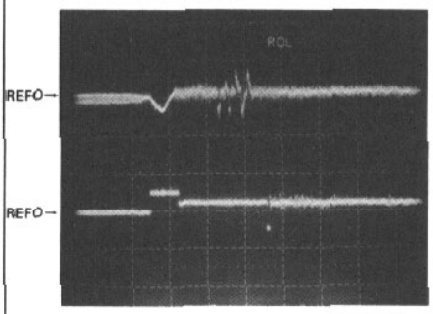
⑥ CH1: FEY 0.1V/div.
③ CH2: FIN 0.2V/div. 20ms/div.
Normal mode: Play



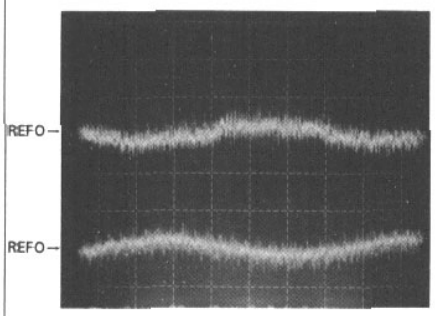
③ CH1: FIN 0.5V/div.
⑩ CH2: SIN 1V/div. 0.5s/div.
Normal mode: Focus close (12cm)



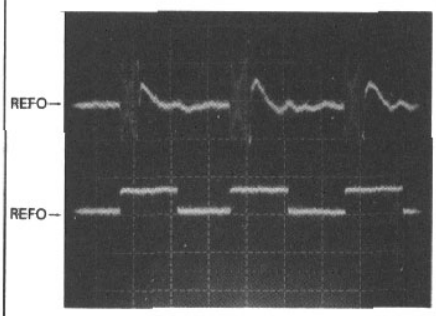
③ CH1: FIN 0.5V/div.
⑩ CH2: SIN 1V/div. 0.5s/div.
Normal mode: Focus close (8cm)



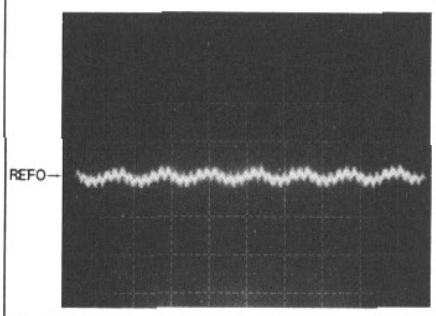
⑧ CH1: TEY 0.2V/div.
⑨ CH2: TIN 0.2V/div. 20ms/div.
Normal mode: Play



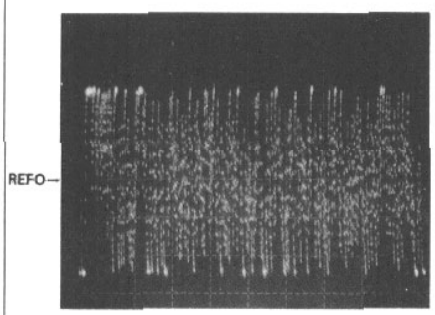
⑧ CH1: TEY 0.5V/div.
⑪ CH2: SD 0.5V/div. 5ms/div.



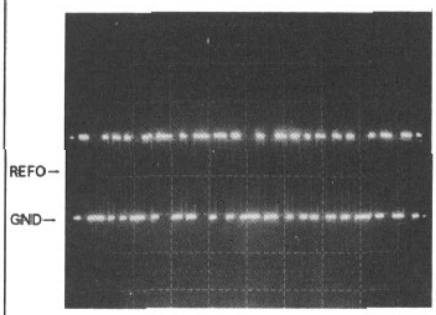
⑩ SIN 0.5V/div. 0.1s/div.
Normal mode: Play (12cm)



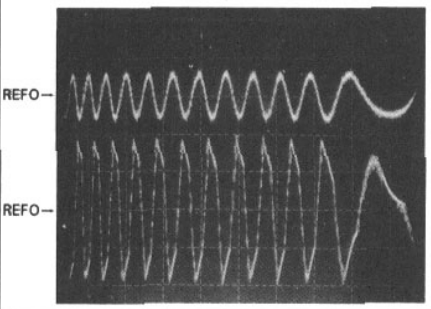
⑩ SIN 0.5V/div. 10ms/div.
Long Search (12cm)



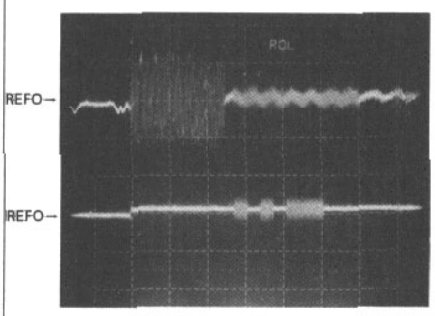
⑫ EFM 1V/div. 5µs/div.
Play



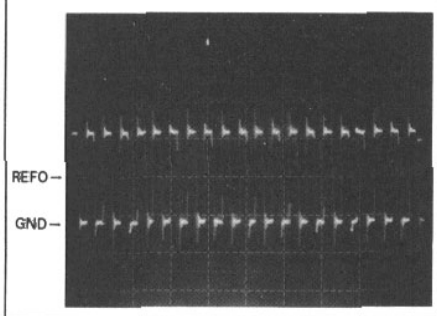
⑧ CH1: TEY 1V/div.
⑬ CH2: TEC 1V/div. 2ms/div.
Test mode: Focus close
Tracking open



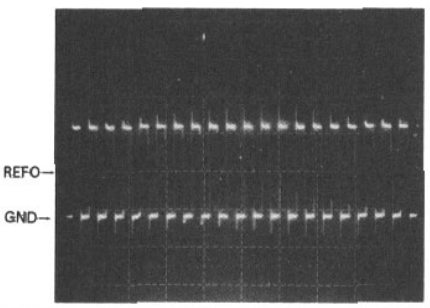
⑧ CH1: TEY 0.5V/div.
⑥ CH2: FEY 0.5V/div. 0.2s/div.
Normal mode: AGC after focus close



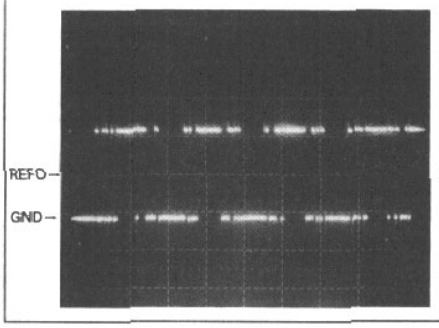
⑭ PLCK 2V/div. 0.5µs/div.
Play



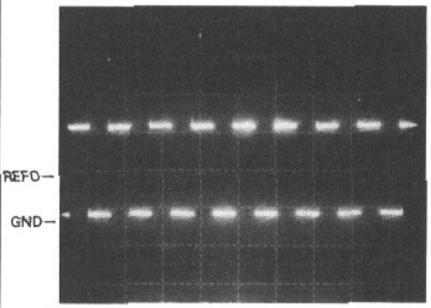
⑮ SCKO 2V/div. 1µs/div.
Play



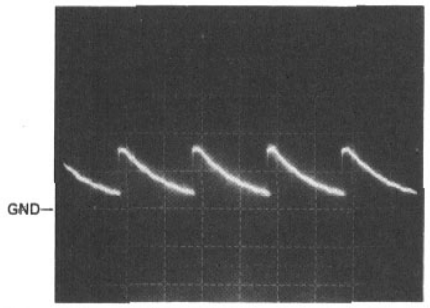
⑯ Dout 2V/div. 10µs/div.
Play



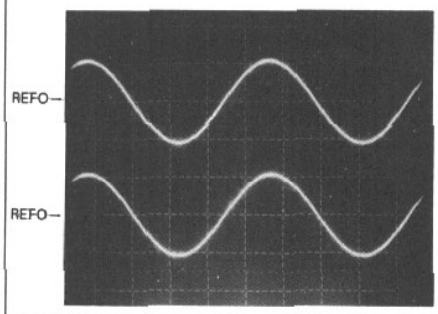
⑰ LRCK 2V/div. 20µs/div.



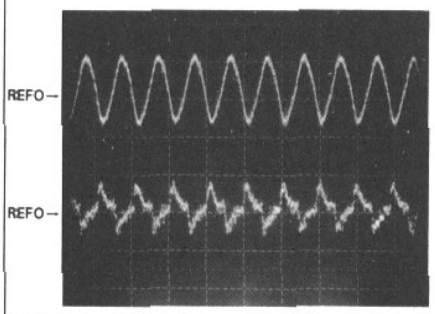
⑱ VD 5V/div. 50ms/div.
Normal mode: No disc



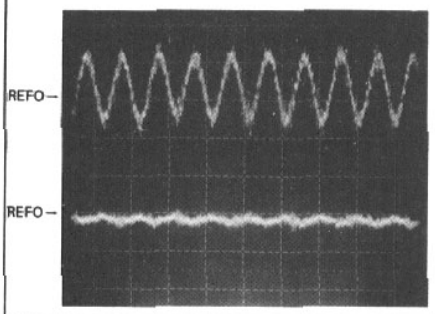
⑲ CH1: R OUT 1V/div.
⑳ CH2: L OUT 1V/div.
0.2ms/div.
Normal mode: Play (1kHz 0dB)



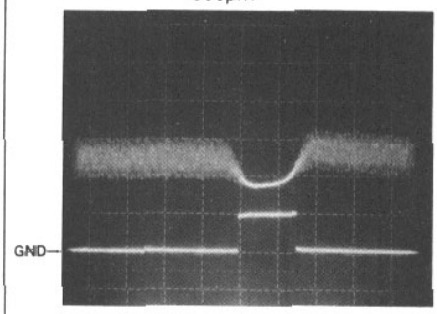
⑥ CH1: FEY 0.2V/div.
③ CH2: FIN 0.5V/div.
1ms/div.
Normal mode: During AGC



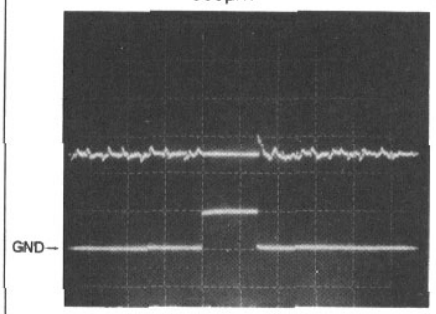
⑧ CH1: TEY 0.2V/div.
⑨ CH2: TIN 0.5V/div.
1ms/div.
Normal mode: During AGC



① CH1: RFO 1V/div.
㉑ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800μm



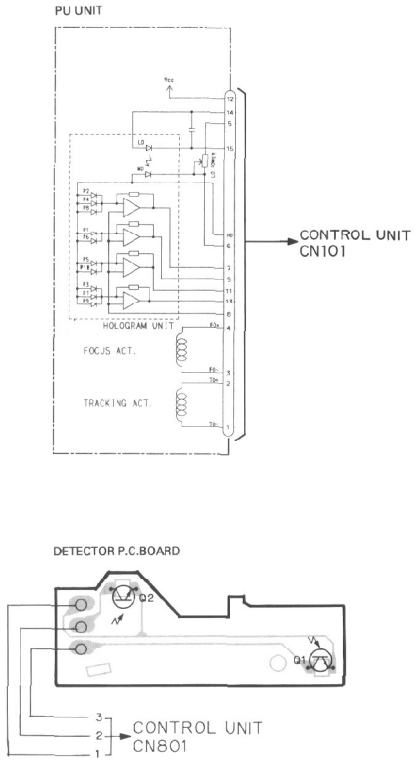
③ CH1: FIN 1V/div.
㉑ CH2: HOLD 5V/div.
0.5ms/div.
Normal mode: The defect part passes 800μm

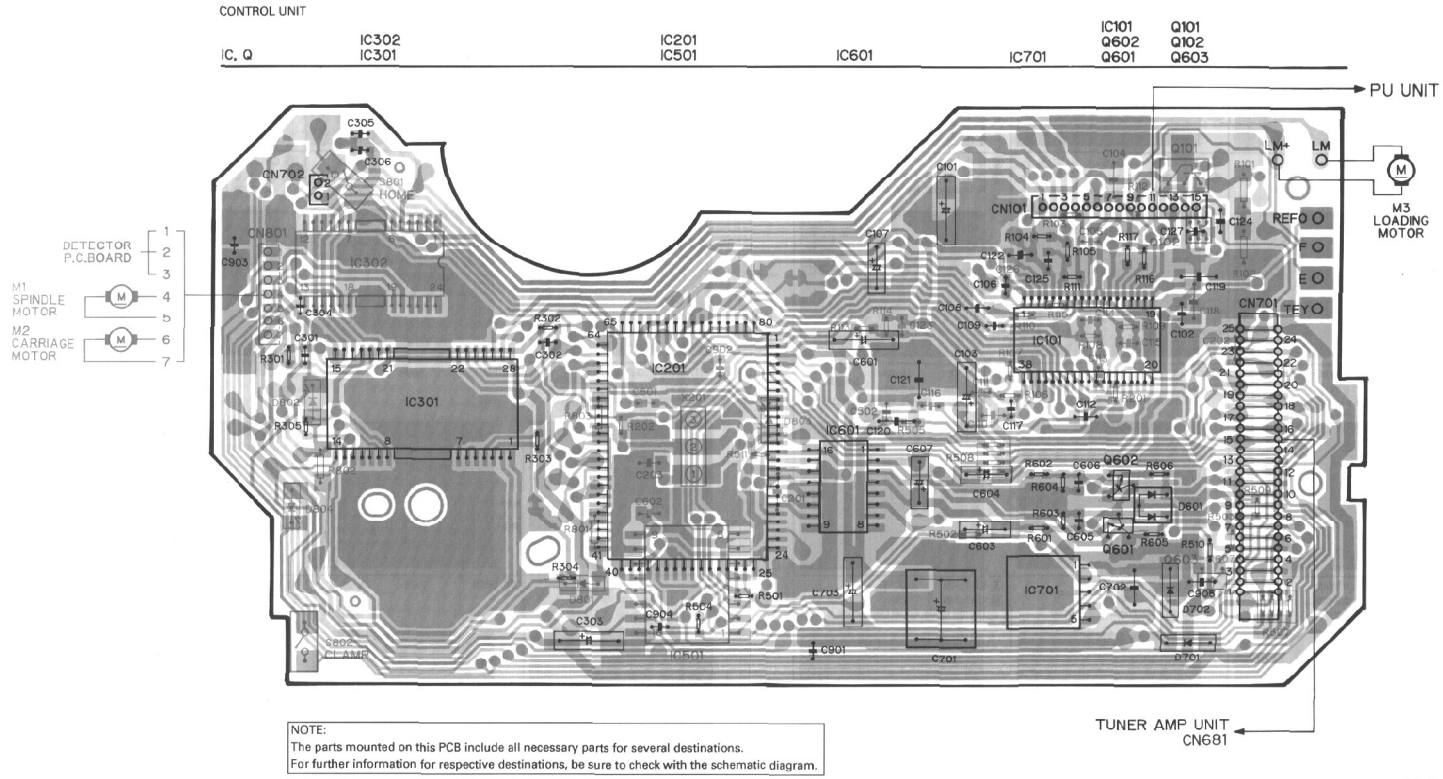


11. CIRCUIT DIAGRAM AND PATTERN

11.1 CD MECHANISM MODULE

● **Connection Diagram**

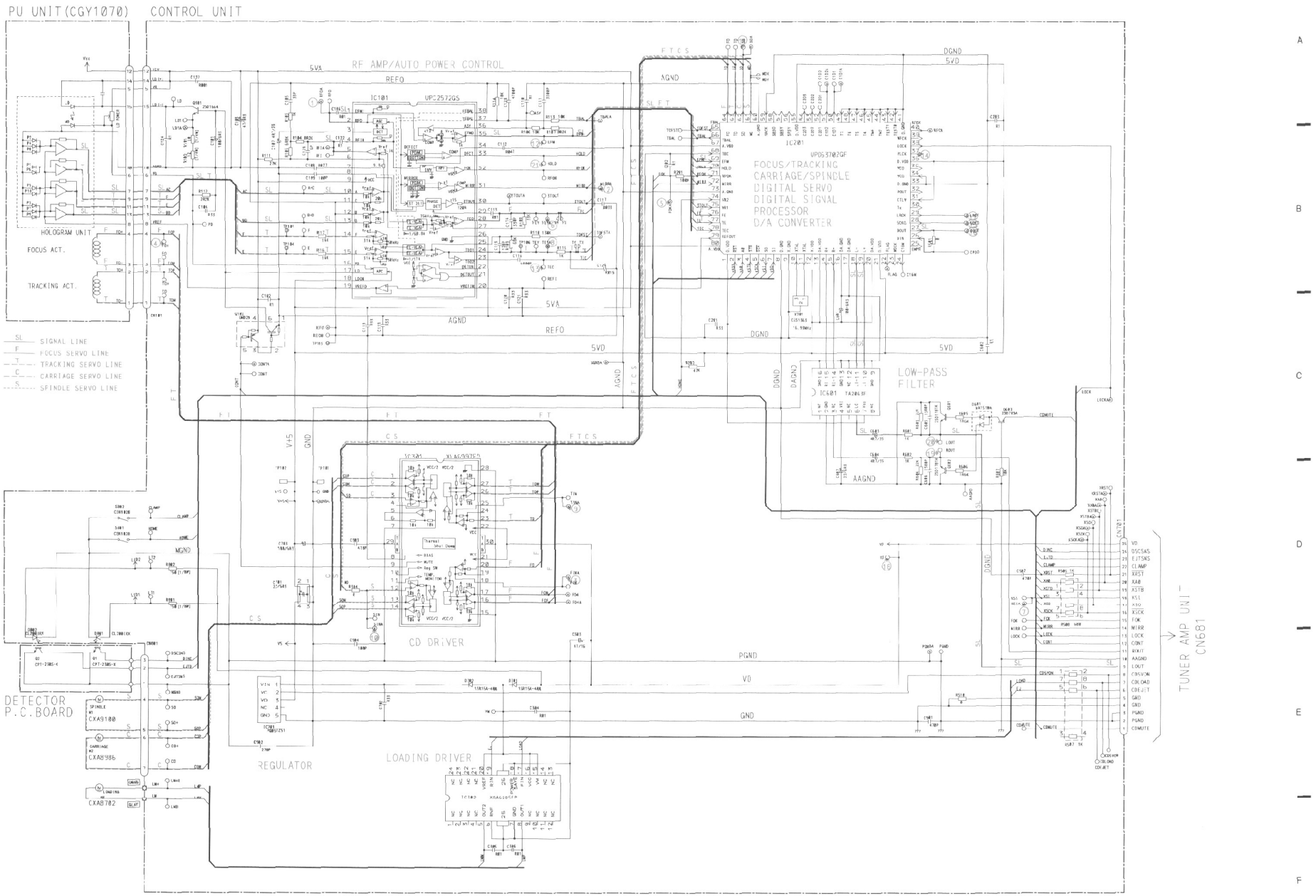




NOTE:
The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

Fig. 7

● Circuit Diagram

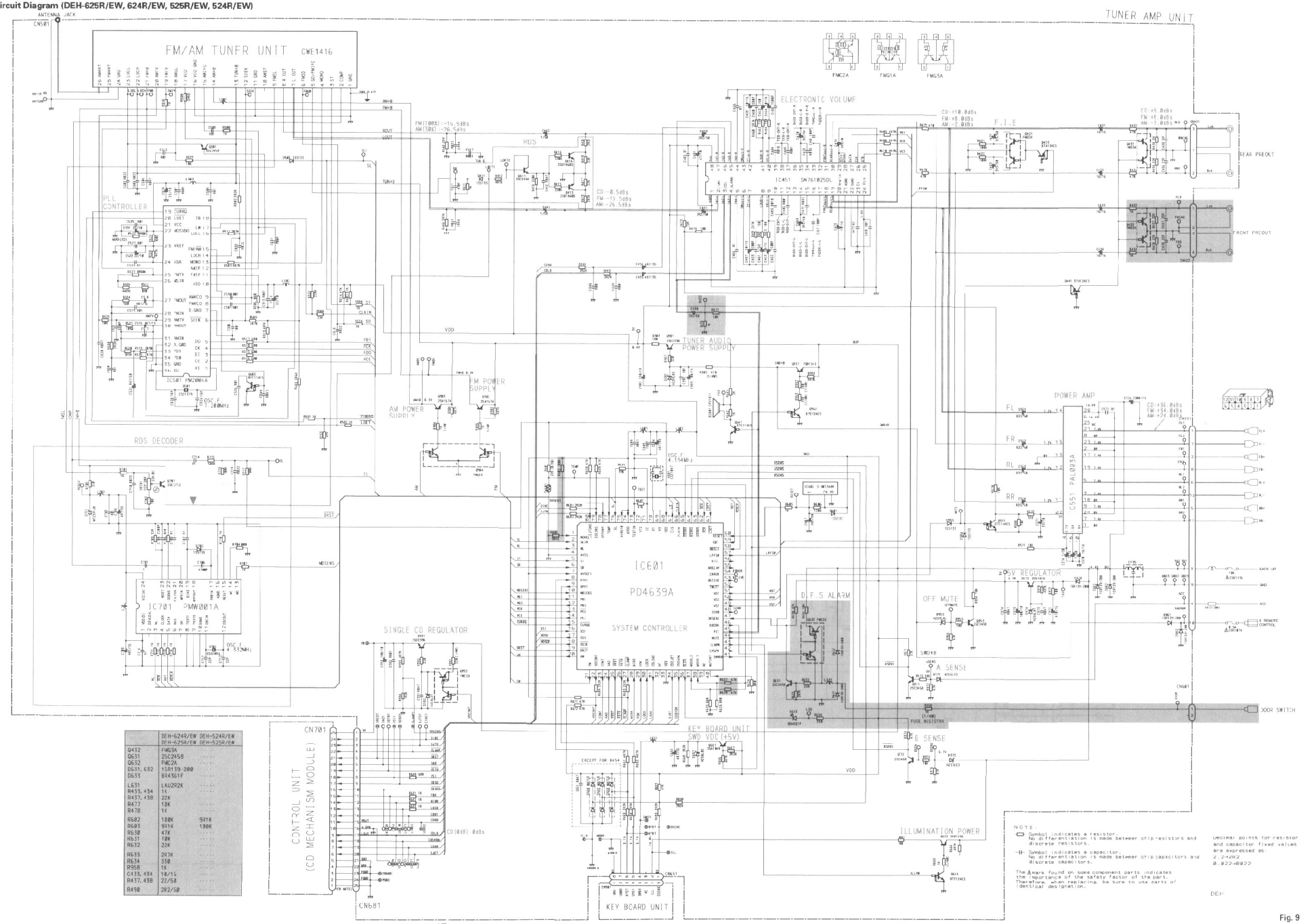


SWITCHES:
CONTROL UNIT
S801:HOME SWITCH ..... ON-OFF
S802:CLAMP SWITCH ..... ON-OFF
The underlined indicates the switch position.

Fig. 8

11.2 TUNER AMP UNIT

● **Circuit Diagram (DEH-625R/EW, 624R/EW, 525R/EW, 524R/EW)**



	DEH-624R/EW DEH-524R/EW DEH-625R/EW DEH-525R/EW
Q432	FMG3A
Q631	2SC2458
Q632	FMC2A
D631, 632	1SR139-200
D635	BR4361F
L631	LAU292K
R435, 434	1K
R437, 438	22K
R477	10K
R478	1K
R602	100K 921K
R603	921K 100K
R630	47K
R631	10K
R632	22K
R633	267K
R634	330
R958	1K
C435, 434	10/15
R437, 438	22/50
R490	282/50

NOTE:
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

The ▲mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Decimal points for resistor and capacitor fixed values are expressed as: 2.2=2R2, 0.022=R022

DEH

Fig. 9

● Circuit Diagram (DEH-424R/GR)

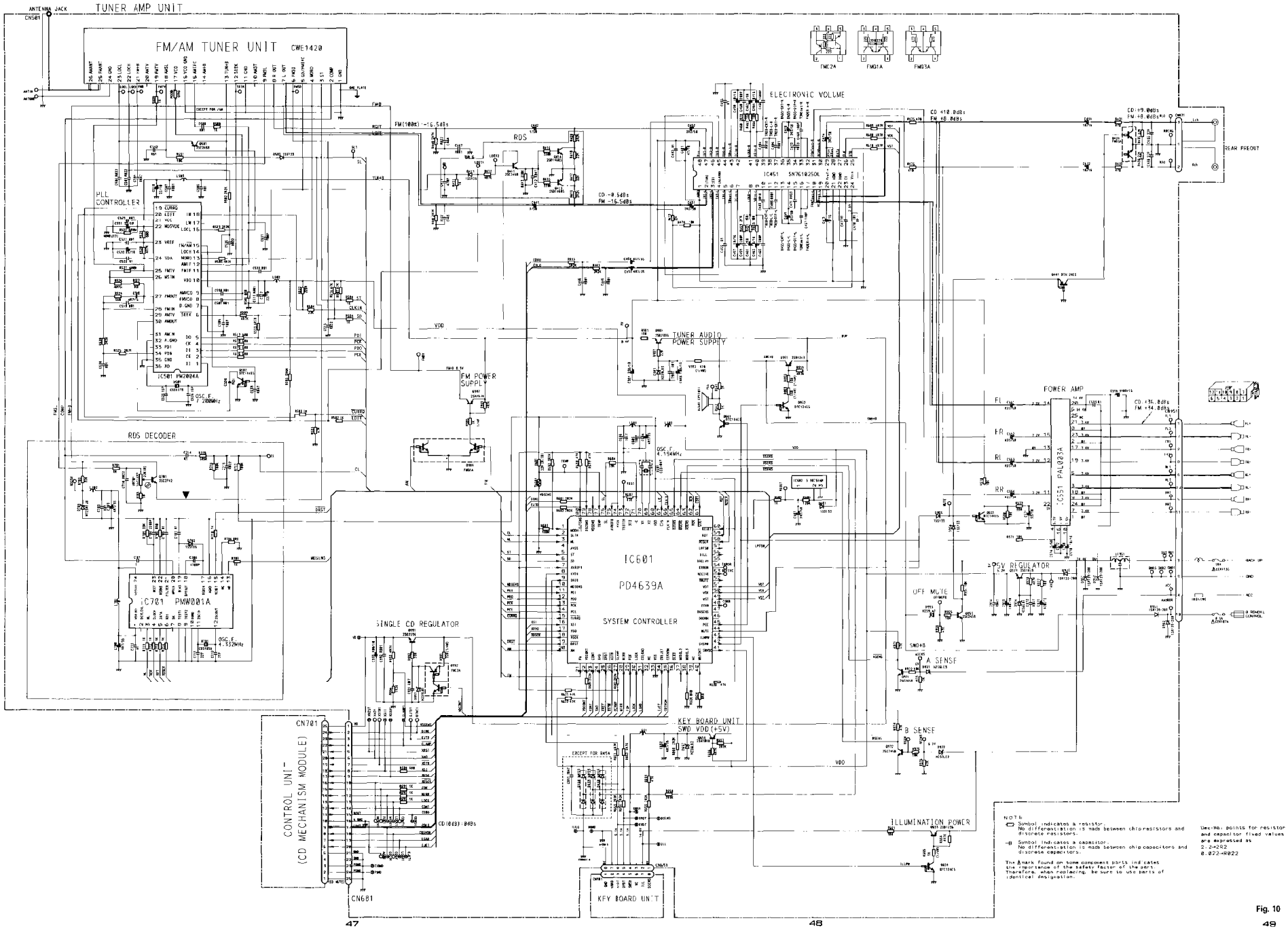


Fig. 10

● Circuit Diagram (DEH-424/EW, 425/IT)

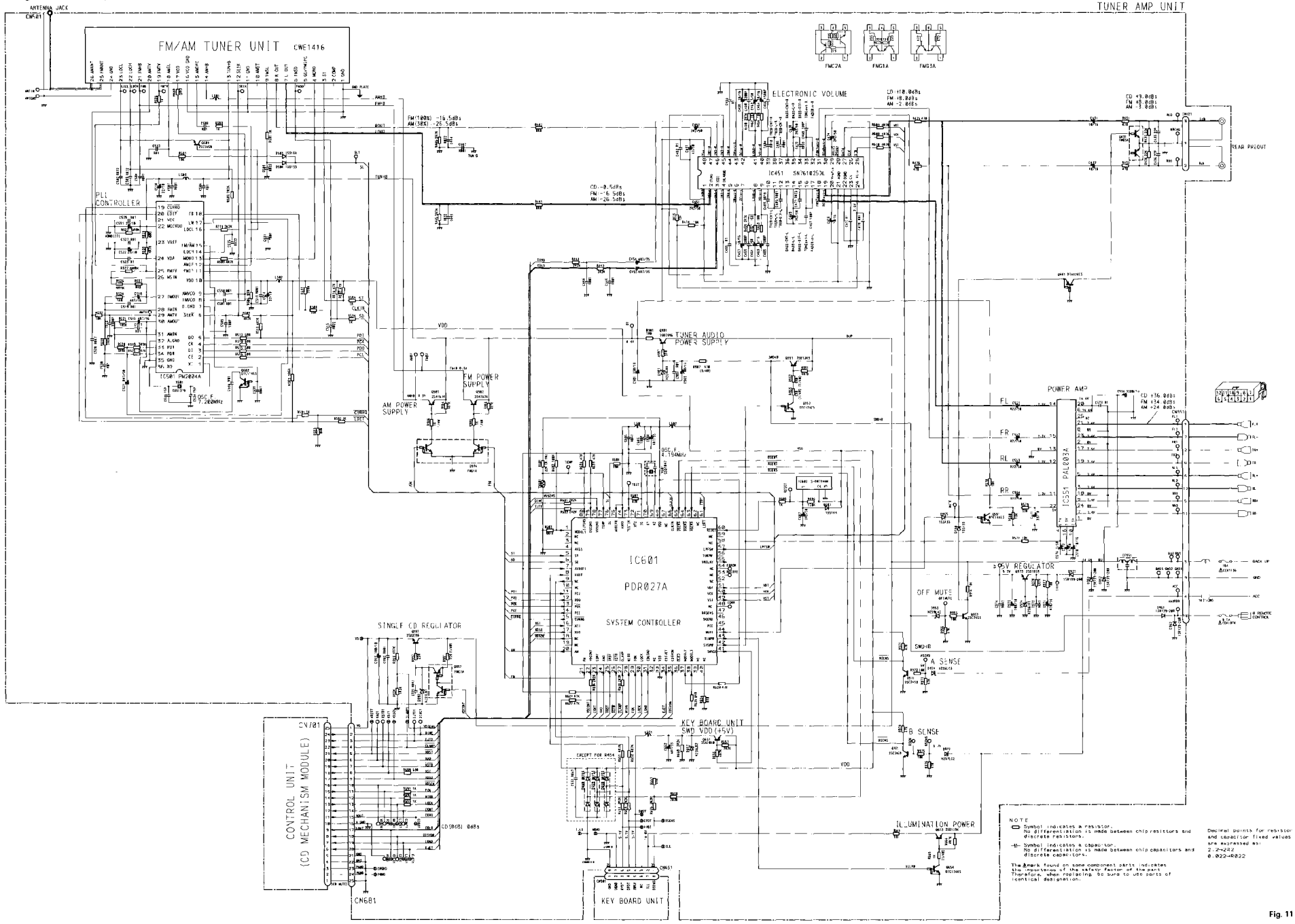
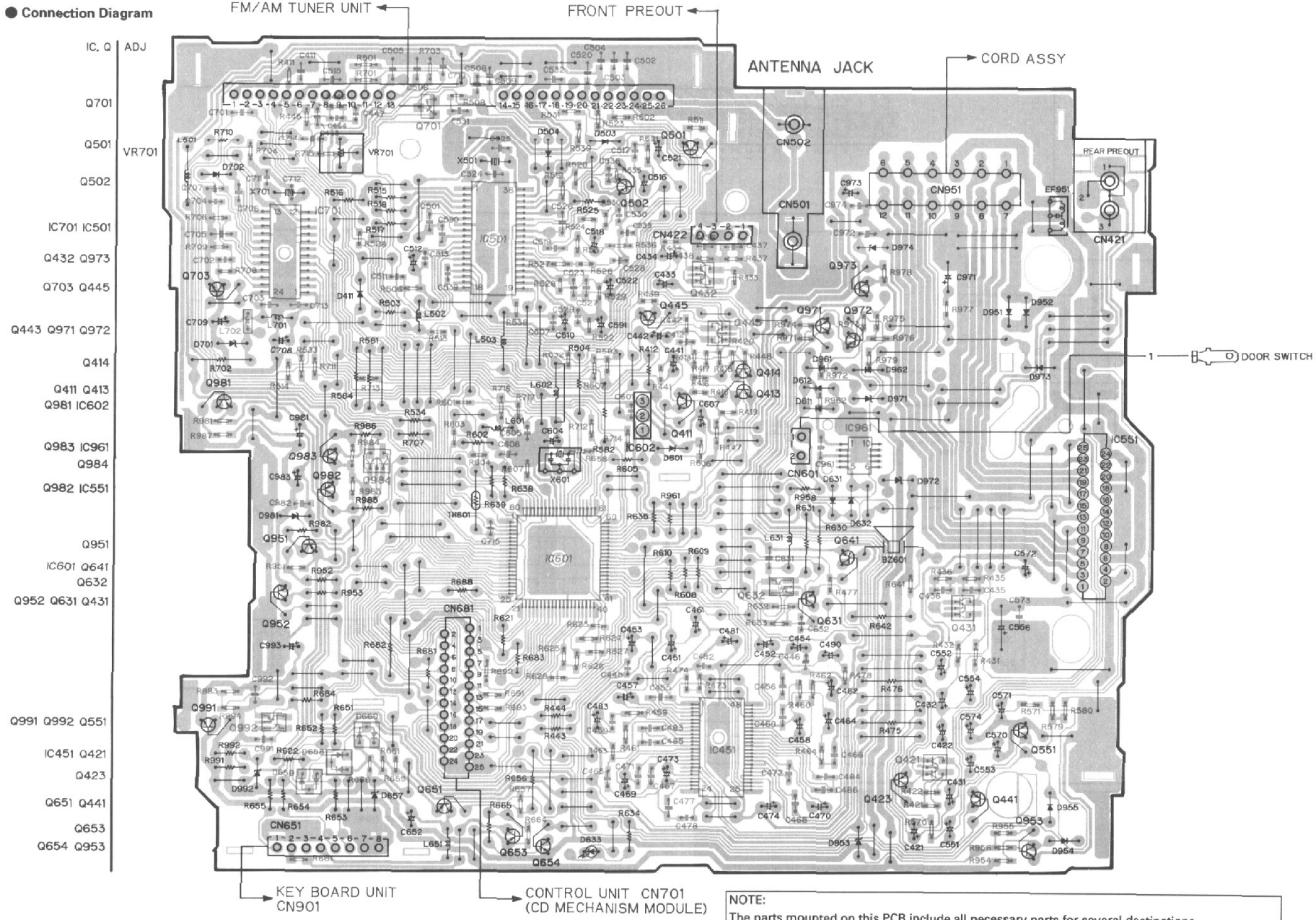


Fig. 11

● **Connection Diagram**

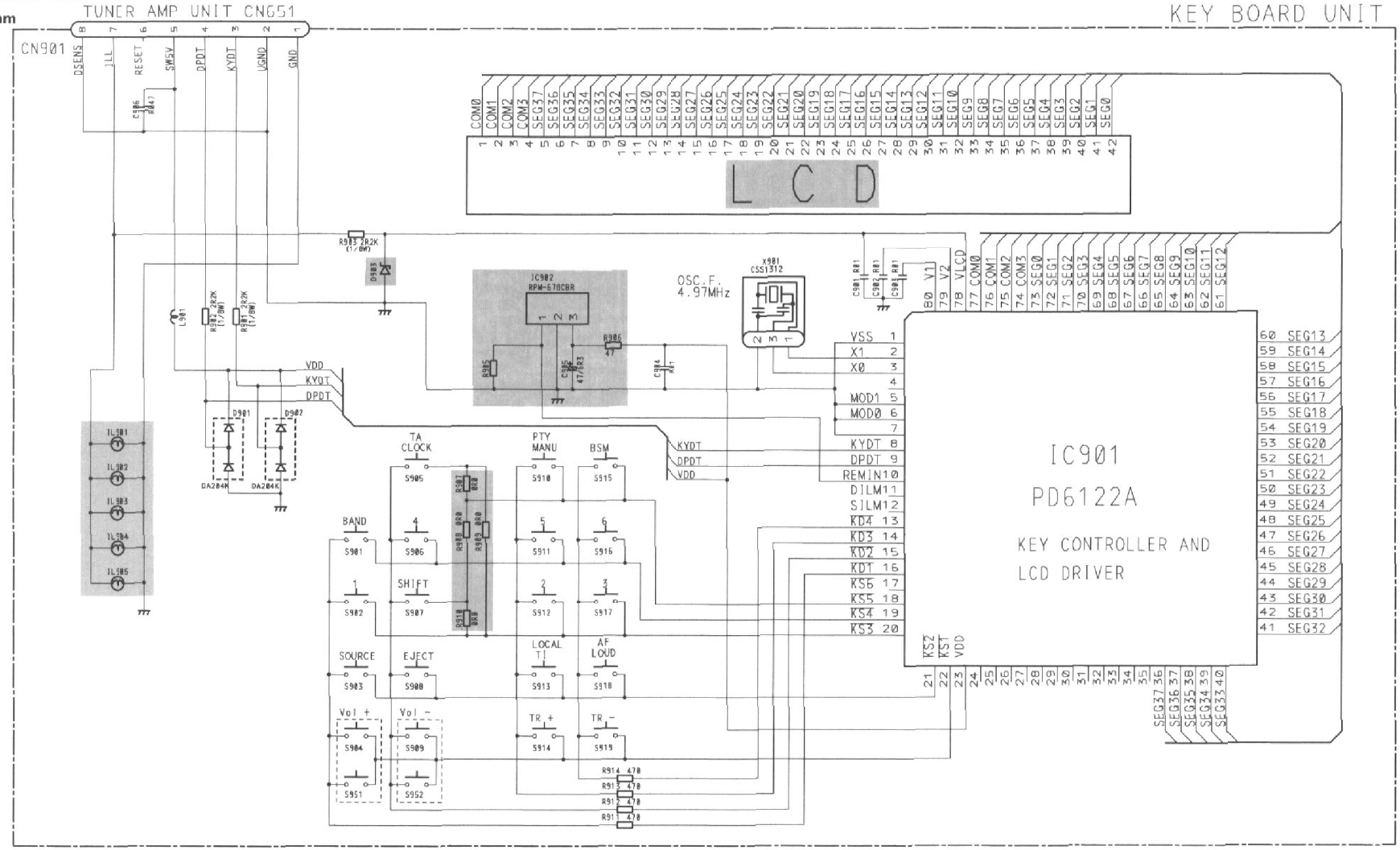


NOTE:
The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

Fig. 12

11.3 KEY BOARD UNIT

● Circuit Diagram



	DEH-625R/EW	DEH-624R/EW	DEH-525R/EW	DEH-524R/EW	DEH-424R/GR	DEH-424/EW	DEH-425/IT
IC902	RPM-678CBR	RPM-678CBR	·····	·····	·····	·····	·····
D903	MA3051M	MA3051L	MA3051M	MA3051L	MA3051L	MA3051L	MA3056L
LCD	CAW1350	CAW1328	CAW1350	CAW1328	CAW1328	CAW1330	CAW1330
IL901-905	CEL1341	CEL1295	CEL1341	CEL1295	CEL1295	CEL1295	CEL1341
R905	·····	·····	47	0R0	0R0	0R0	0R0
R906	47	47	·····	·····	·····	·····	·····
R907, 910	0R0	0R0	0R0	0R0	0R0	·····	·····
R908, 909	·····	·····	·····	·····	·····	0R0	0R0
C905	47/6R3	47/6R3	·····	·····	·····	·····	·····

NOTE:

Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

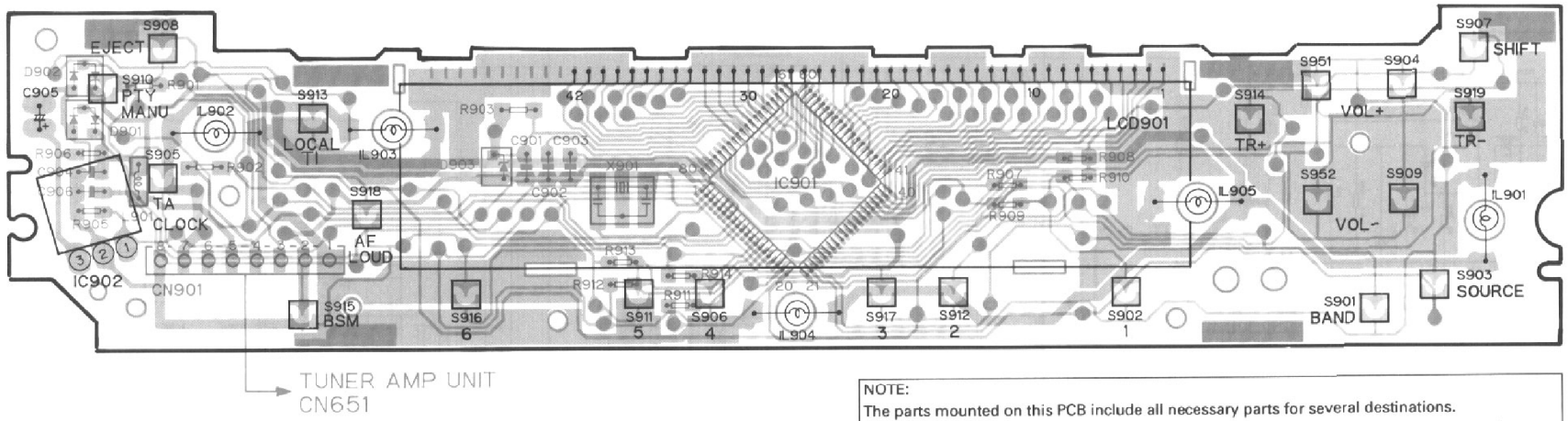
Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

Fig. 13

● **Connection Diagram**

IC IC902

IC901



NOTE:
The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

Fig. 14

11. 4 FM/AM TUNER UNIT

● **Circuit Diagram (Except for DEH-424R/GR)**

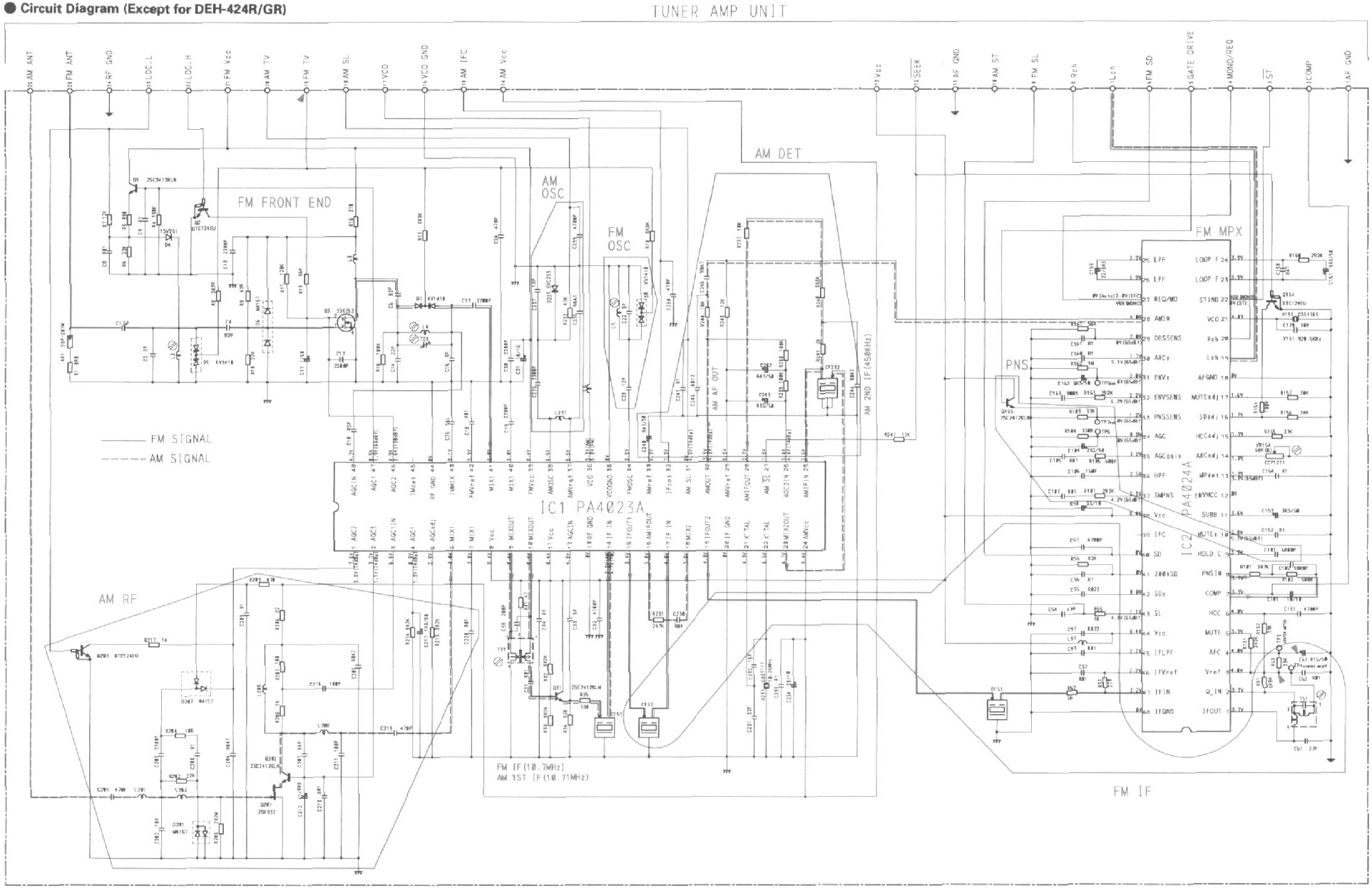


Fig. 15

● **Circuit Diagram (DEH-424R/GR)**

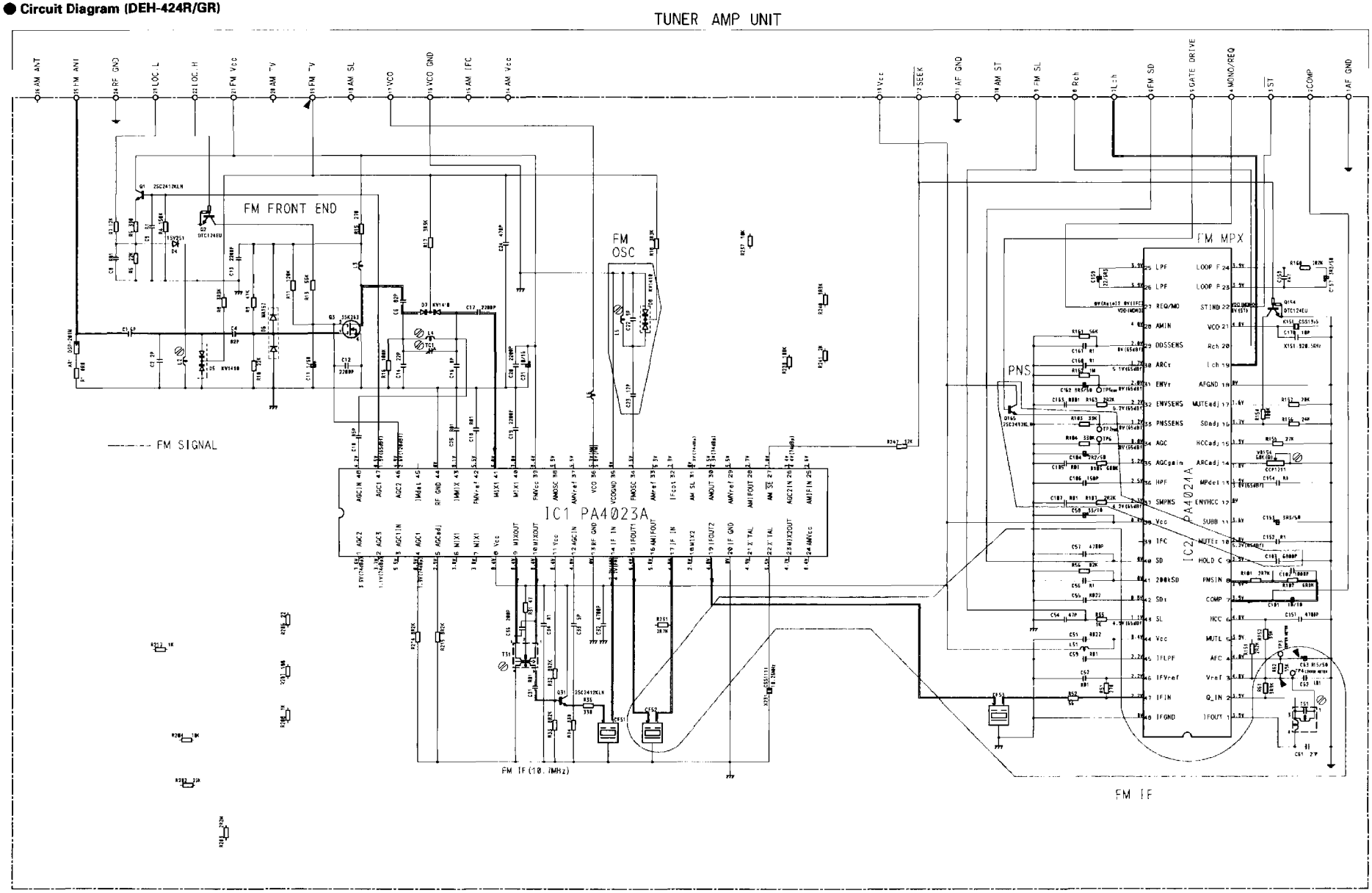
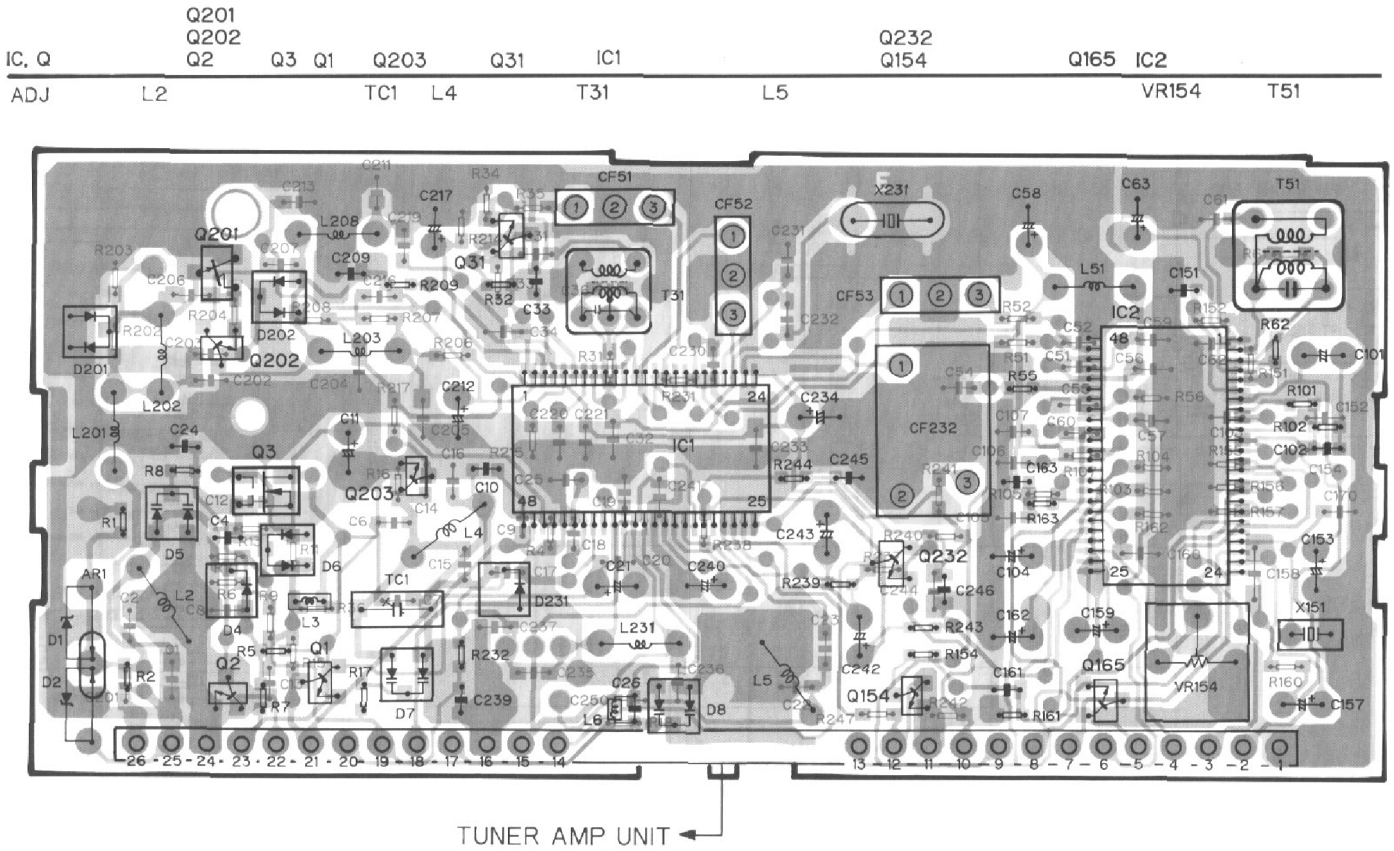


Fig. 16

● **Connection Diagram**



NOTE:
The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

Fig. 17

12. EXPLODED VIEW AND PARTS LIST

12.1 CHASSIS

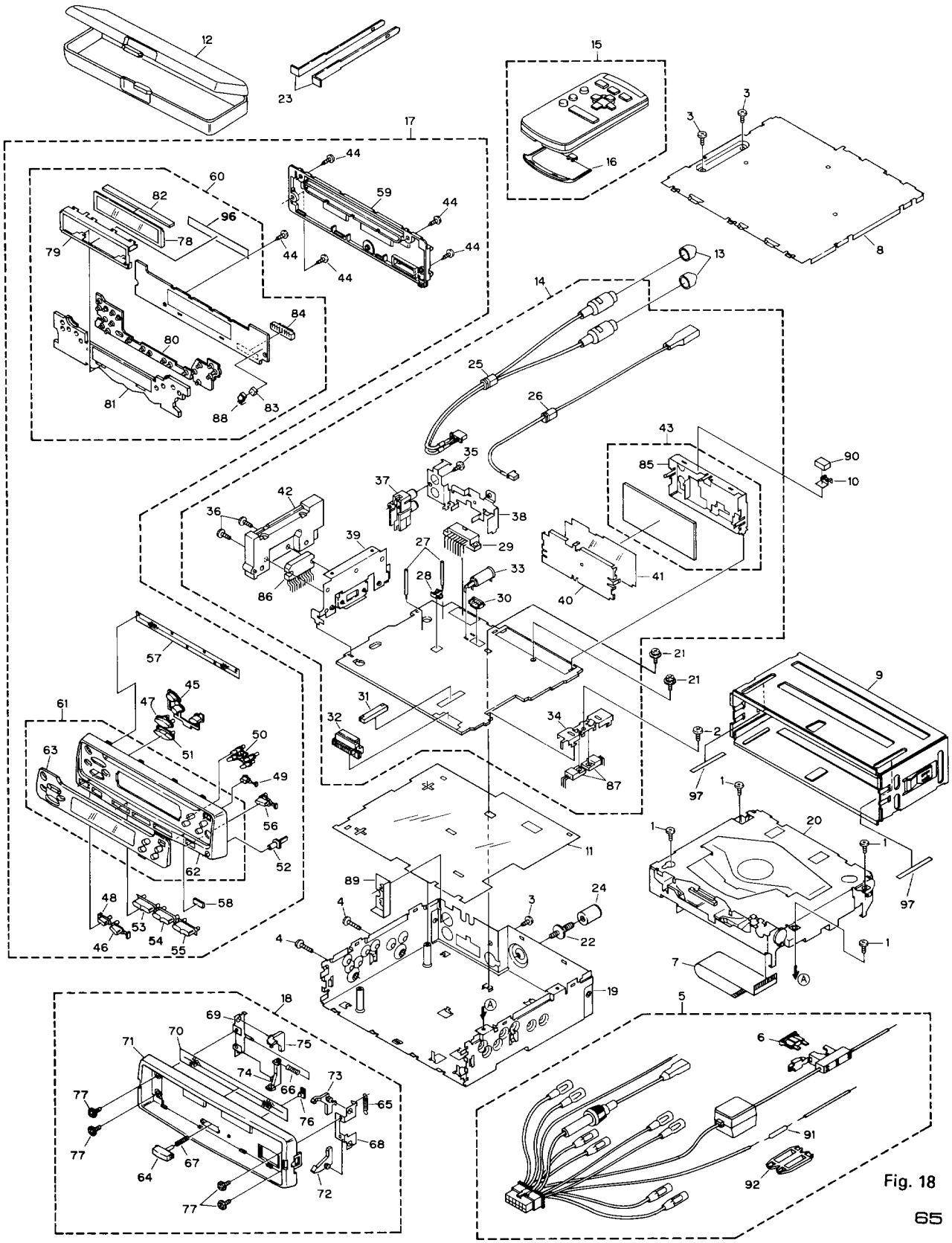


Fig. 18

NOTE:

● Parts marked by " * "are generally unavailable because they are not in our Master Spare Parts List.

● **Parts List**

Mark	No.	Description	Part No.
	1	Screw	BSZ26P050FMC
	2	Screw	BSZ26P080FMC
	3	Screw	BSZ30P050FMC
	4	Screw	BSZ30P160FMC
	5	Cord	CDE4867
	6	Fuse	CEK1136
	7	Cable	CDE4869
	8	Case	CNB1989
	9	Holder	CNC4946
	10	Holder	CNC6469
	11	Insulator	CNM4522
	12	Case	CNS3860
	13	Cap	CNV2680
	14	Tuner Amp Unit	CWM4483
	15	Remote Control Assy	CXA7390
	16	Battery Cover	CNS3383
	17	Detach Grille Assy	CXA8575
	18	Panel Assy	CXA8578
	19	Chassis Unit	CXA8904
	20	CD Mechanism Module	CXK5001
	21	Screw	PSB30P060FMC
	22	Screw	CBA1284
	23	Handle	CNC4947
	24	Bush	CNV1009
	25	Cord	CDE4770
	26	Cord	CDE4771
	27	Clamper	CEF1005
	28	Plug(CN601)(2P)	CKM1129
	29	Plug(CN951)(12P)	CKM1225
	30	Plug(CN422)(4P)	CKS1238
	31	Connector(CN681)(25P)	CKS2228
	32	Connector(CN651)(8P)	CKS2884
	33	Antenna Jack(CN501)	CKX1006
	34	Holder	CNC6132
	35	Screw	BPZ26P080FMC
	36	Screw	BSZ26P120FMC
	37	Connector(CN421)	CKS3357
	38	Bracket	CNC6130
	39	Holder	CNC6131
	40	Holder	CNC6356
	41	Insulator	CNM4684
	42	Heat Sink	CNR1407
	43	FM/AM Tuner Unit	CWE1416
	44	Screw	BPZ20P100FZK
	45	Button (S,SEEK)	CAC4469
	46	Button (BAND)	CAC4470
	47	Button (+)	CAC4471
	48	Button (SOURCE)	CAC4472
	49	Button (EJECT)	CAC4473
	50	Button (•,-)	CAC4474
	51	Button (-)	CAC4542
	52	Button (DETACH)	CAC4547
	53	Button (1 2)	CAC4578
	54	Button (3 4)	CAC4579
	55	Button (5 6)	CAC4580
	56	Button (BSM)	CAC4581
	57	Cover	CNM4704
	58	Spacer	CNM4776
	59	Cover	CNS3694
	60	Key Board Unit	CWM4605
	61	Grille Unit	CXA9109
	62	Grille	CNS4040
	63	Plate	CNS3989
	64	Button	CAC3776
	65	Spring	CBH1834
	66	Spring	CBH1835
	67	Spring	CBH1858
	68	Bracket	CNC6135
	69	Bracket	CNC6136
	70	Cover	CNM4875
	71	Panel	CNS3744
	72	Arm	CNV4358
	73	Arm	CNV4359
	74	Arm	CNV4437
	75	Arm	CNV4438
	76	Lens	CNV4479
	77	Screw	PMS20P030FZK
	78	LCD	CAW1350
	79	Holder	CNC6134
	80	Rubber	CNV4354

Mark	No.	Description	Part No.
	81	Lens	CNV4355
	82	Connector	CNV4449
	83	Spacer	CNM4740
	84	Connector(CN901)(8P)	CKS2883
	85	Holder	CNC6555
	86	IC(IC551)	PAL003A
	87	Transistor(Q981,991)	2SD2396
	88	IC(IC902)	RPM-678CBR
	89	Insulator	CNM4811
	90	Cushion	CNM4870
	91	Resistor	RS1/2P102JL
	92	Cap	CNS1472
	93-95	•••••	
	96	Spacer	CNM4871
*	97	Spacer	CNM4888

● The DEH-624R/EW, DEH-525R/EW, DEH-524R/EW, DEH-424R/GR, DEH-424/EW, and DEH-425/IT Parts Lists enumerate the parts which differ from those enumerated in the DEH-625R/EW Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The DEH-625R/EW Parts List is given on page 65.

Mark	No.	Description	625R/EW Part No.	624R/EW Part No.	525R/EW Part No.	524R/EW Part No.	424R/GR Part No.	424/EW Part No.	425/IT Part No.
	13	Cap	CNV2680	CNV2680	•••••	•••••	•••••	•••••	•••••
	14	Tuner Amp Unit	CWM4483	CWM4483	CWM4484	CWM4484	CWM4492	CWM4493	CWM4493
	15	Remote Control Assy	CXA7390	CXA8336	•••••	•••••	•••••	•••••	•••••
	16	Battery Cover	CNS3383	CNS3383	•••••	•••••	•••••	•••••	•••••
	17	Detach Grille Assy	CXA8575	CXA8214	CXA8576	CXA8249	CXA8257	CXA8258	CXA8577
	18	Panel Assy	CXA8578	CXA8215	CXA8579	CXA8296	CXA8296	CXA8296	CXA8579
	19	Chassis Unit	CXA8904	CXA8211	CXA8905	CXA8228	CXA8906	CXA8907	CXA8231
	25	Cord	CDE4770	CDE4770	•••••	•••••	•••••	•••••	•••••
	26	Cord	CDE4771	CDE4771	•••••	•••••	•••••	•••••	•••••
	27	Clamper	CEF1005	CEF1005	•••••	•••••	•••••	•••••	•••••
	28	Plug(CN601)	CKM1129	CKM1129	•••••	•••••	•••••	•••••	•••••
	30	Plug(CN422)	CKS1238	CKS1238	•••••	•••••	•••••	•••••	•••••
	40	Holder	CNC6356	CNC6356	CNC6356	CNC6356	CNC6356	•••••	•••••
	41	Insulator	CNM4684	CNM4684	CNM4684	CNM4684	CNM4684	•••••	•••••
	43	FM/AM Tuner Unit	CWE1416	CWE1416	CWE1416	CWE1416	CWE1420	CWE1416	CWE1416
	45	Button(S,SEEK)	CAC4469	CAC4622	CAC4469	CAC4622	CAC4622	CAC4622	CAC4469
	46	Button(BAND)	CAC4470	CAC4621	CAC4470	CAC4621	CAC4621	CAC4621	CAC4470
	47	Button(+)	CAC4471	CAC4584	CAC4471	CAC4584	CAC4584	CAC4584	CAC4471
	48	Button(SOURCE)	CAC4472	CAC4734	CAC4472	CAC4734	CAC4734	CAC4734	CAC4472
	50	Button(•,-)	CAC4474	CAC4623	CAC4474	CAC4623	CAC4623	CAC4623	CAC4474
	51	Button(-)	CAC4542	CAC4585	CAC4542	CAC4585	CAC4585	CAC4585	CAC4542
	52	Button(DETACH)	CAC4547	CAC4586	CAC4547	CAC4586	CAC4586	CAC4586	CAC4547
	53	Button(1 2)	CAC4578	CAC4587	CAC4578	CAC4587	CAC4587	CAC4587	CAC4578
	54	Button(3 4)	CAC4579	CAC4588	CAC4579	CAC4588	CAC4588	CAC4588	CAC4579
	55	Button(5 6)	CAC4580	CAC4589	CAC4580	CAC4589	CAC4589	CAC4589	CAC4580
	56	Button(BSM)	CAC4581	CAC4590	CAC4581	CAC4590	CAC4590	CAC4590	CAC4581
	59	Cover	CNS3694	CNS3817	CNS3694	CNS3817	CNS3817	CNS3817	CNS3694
	60	Key Board Unit	CWM4605	CWM4499	CWM4606	CWM4500	CWM4503	CWM4608	CWM4607
	61	Grille Unit	CXA9109	CXA9108	CXA8281	CXA8581	CXA8289	CXA8290	CXA8582
	62	Grille	CNS4040	CNS4041	CNS3813	CNS3812	CNS3812	CNS3812	CNS3813

Mark	No.	Description	625R/EW Part No.	624R/EW Part No.	525R/EW Part No.	524R/EW Part No.	424R/GR Part No.	424/EW Part No.	425/IT Part No.
	63	Plate	CNS3989	CNS3814	CNS3696	CNS3815	CNS3698	CNS3739	CNS3816
	71	Panel	CNS3744	CNS3818	CNS3744	CNS3818	CNS3818	CNS3818	CNS3744
	76	Lens	CNV4479	CNV4479	•••••	•••••	•••••	•••••	•••••
	78	LCD	CAW1350	CAW1328	CAW1350	CAW1328	CAW1328	CAW1330	CAW1330
	79	Holder	CNC6134	CNC6134	CNC6134	CNC6134	CNC6134	CNC6430	CNC6430
	83	Spacer	CNM4740	CNM4740	•••••	•••••	•••••	•••••	•••••
	88	IC(IC902)	RPM-678CBR	RPM-678CBR	•••••	•••••	•••••	•••••	•••••

12.2 CD MECHANISM MODULE

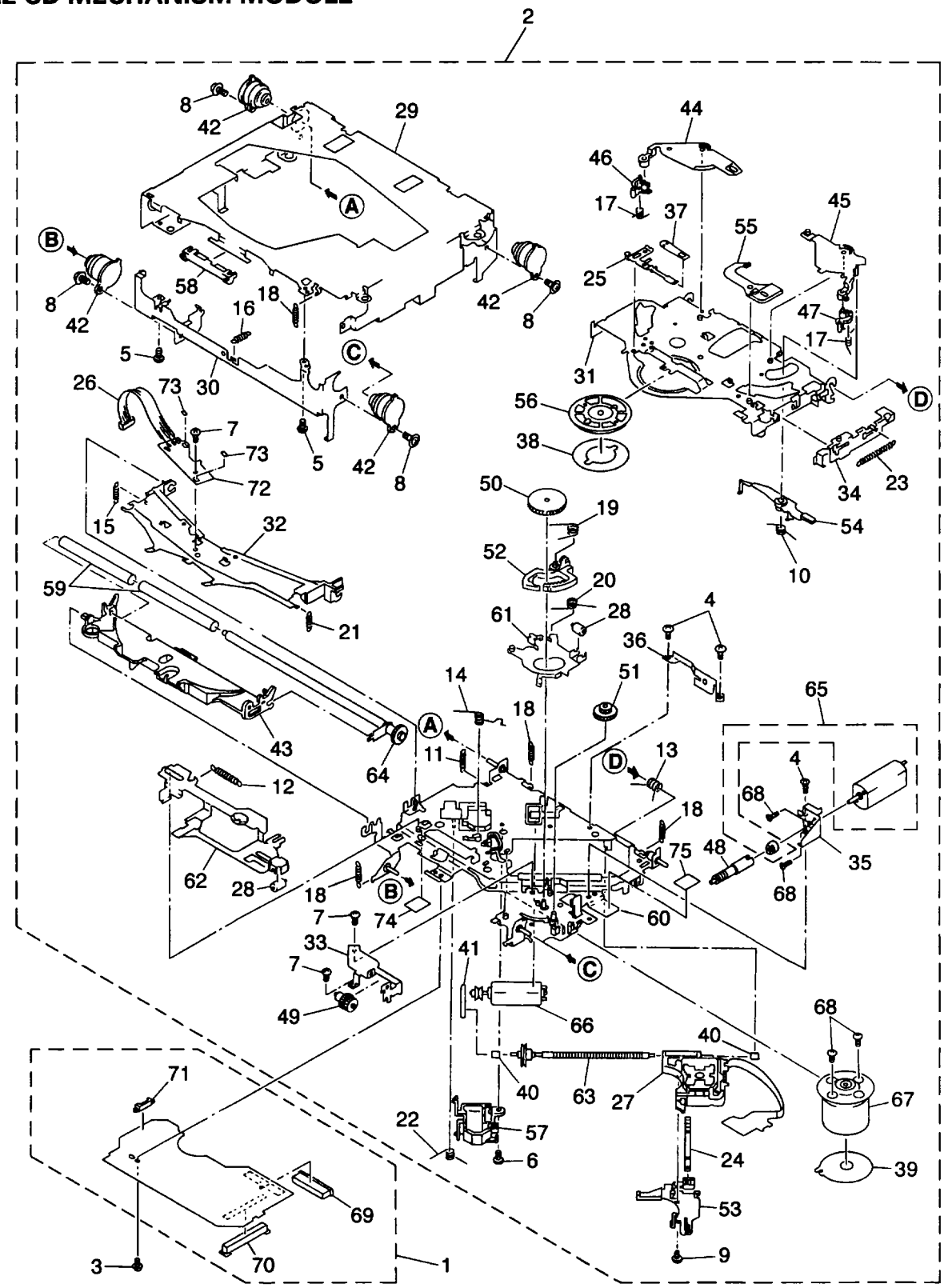


Fig. 19

● Parts List

Mark	No.	Description	Part No.
	1	Control Unit	CWX1889
	2	CD Mechanism Unit	CXA8870
	3	Screw	PMS26P035FMC
	4	Screw	BMZ20P030FMC
	5	Screw	BSZ20P040FMC
	6	Screw(M2×3)	CBA1077
	7	Screw(M2×2)	CBA1250
	8	Screw(M2×5)	CBA1296
	9	Screw(M2×3.85)	CBA1362
	10	Spring	CBH1916
	11	Spring	CBH1724
	12	Spring	CBH1727
	13	Spring	CBH1729
	14	Spring	CBH1730
	15	Spring	CBH1731
	16	Spring	CBH1732
	17	Spring	CBH1736
	18	Spring	CBH1745
	19	Spring	CBH1832
	20	Spring	CBH1833
	21	Spring	CBH1848
	22	Spring	CBH1849
	23	Spring	CBH1863
	24	Spring	CBL1214
	25	Spring	CBL1269
	26	Connector(CN1)	CDE4576
	27	PU Unit	CGY1070
	28	Roller	CLA2627
	29	Frame	CNC5796
	30	Frame	CNC5797
	31	Arm	CNC5799
*	32	Arm	CNC5801
	33	Bracket	CNC5871
	34	Lever	CNC6054
	35	Bracket	CNC6056
*	36	Bracket	CNC6376
	37	Spacer	CNM3315
	38	Sheet	CNM4849
	39	P.C.Board	CNP4230
	40	Bearing	CNR1415
	41	Belt	CNT1071
	42	Damper	CNV3974
	43	Arm	CNV4120
	44	Arm	CNV4122
	45	Arm	CNV4123
	46	Arm	CNV4124
	47	Arm	CNV4125
	48	Gear	CNV4128
	49	Gear	CNV4129
	50	Gear	CNV4130
	51	Gear	CNV4131
	52	Arm	CNV4136
	53	Holder	CNV4663
	54	Arm	CNV4138
	55	Arm	CNV4139
	56	Clamper	CNV4140
	57	Holder	CNV4664
	58	Guide	CNV4484
	59	Roller	CNV4509
	60	Chassis Unit	CXA8561
	61	Arm Unit	CXA8565
	62	Lever Unit	CXA8567
	63	Screw Unit	CXA8699
	64	Gear Unit	CXA8701
	65	Load Motor Unit(M3)	CXA8702
	66	CRG Motor Unit(M2)	CXA8986
	67	Motor Unit(M1)	CXA9100
	68	Screw	JFZ20P025FMC
	69	Connector(CN101)	CKS1953
	70	Connector(CN701)	CKS2774
	71	Connector(CN801)	CKS2196
*	72	Gathering P.C.Board	CNX2445
	73	Photo-transistor(Q1, 2)	CPT-230S-X
	74	Sheet	CNM4873
	75	Cushion	CNM3917

13. PACKING METHOD

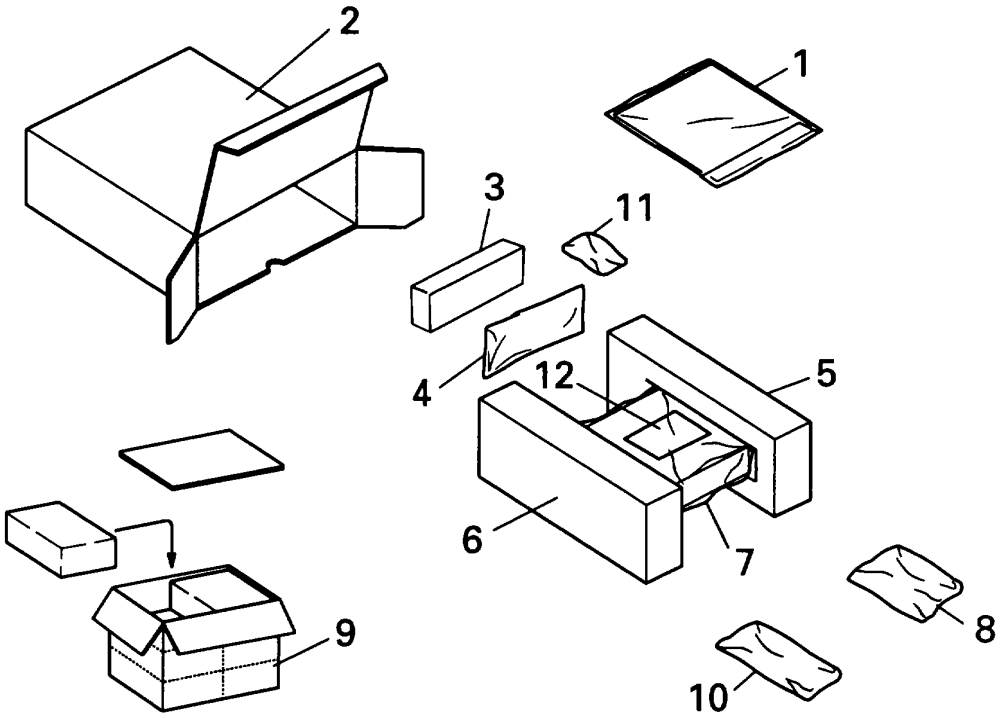


Fig. 20

● **Parts List(DEH-625R/EW)**

* : Non Spare Part

Mark	No.	Description	Part No.
	1-1	Owner's Manual	CRD1940
	1-2	Owner's Manual	CRD1941
	1-3	Owner's Manual	CRD1998
	1-4	Installation Manual	CRD1956
*	1-5	Warranty Card	CRY1087
*	1-6	Passport	CRY1013
*	1-7	Label	CRW1343
	1-8	Polyethylene Bag	CEG1116
	2	Carton	CHG2842
	3	Case	CNS3860
	4	Cord	CDE4867
	5	Protector	CHP1769
	6	Protector	CHP1768
	7	Polyethylene Bag	CEG-162
	8	Accessory Assy	CEA1917
	9	Contain Box	CHL2842
	10	Accessory Assy	CEA1473
	11	Remote Control Assy	CXA7390
*	12	Caution Card	CRP1145

● **Owner's Manual**

Model	Part No.	Language
DEH-625R/EW DEH-624R/EW	CRD1940	English, Spanish
	CRD1941	French, German
	CRD1998	Italian, Dutch
DEH-525R/EW DEH-524R/EW	CRD1942	English, Spanish
	CRD1943	Italian, Dutch
DEH-525R/EW, DEH-524R/EW, DEH-424R/GR	CRD1959	French, German
DEH-424/EW	CRD1944	English, French, German, Spanish
DEH-424/EW, DEH-425/IT	CRD1958	Italian, Dutch

● **Installation Manual**

Model	Part No.	Language
DEH-625R/EW, DEH-624R/EW	CRD1956	English, Spanish, French, German
DEH-525R/EW, DEH-524R/EW, DEH-424R/GR, DEH-424/EW, DEH-425/IT	CRD1957	Italian, Dutch

● The DEH-624R/EW, DEH-525R/EW, DEH-524R/EW, DEH-424R/GR, DEH-424/EW, and DEH-425/IT Parts Lists enumerate the parts which differ from those enumerated in the DEH-625R/EW Parts List only. The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly. The DEH-625R/EW Parts List is given on page 71.

Mark	No.	Description	625R/EW Part No.	624R/EW Part No.	525R/EW Part No.	524R/EW Part No.	424R/GR Part No.	424/EW Part No.	425/IT Part No.
	1-1	Owner's Manual	CRD1940	CRD1940	CRD1942	CRD1942	CRD1959	CRD1944	·····
	1-2	Owner's Manual	CRD1941	CRD1941	CRD1943	CRD1943	·····	·····	·····
	1-3	Owner's Manual	CRD1998	CRD1998	CRD1959	CRD1959	·····	CRD1958	CRD1958
*	1-4	Installation Manual	CRD1956	CRD1956	CRD1957	CRD1957	CRD1957	CRD1957	CRD1957
*	1-6	Passport	CRY1013	CRY1013	CRY1013	CRY1013	CRY1013	CRY1013	·····
*	1-7	Label	CRW1343	CRW1343	·····	·····	·····	·····	·····
	2	Carton	CHG2842	CHG2841	CHG2844	CHG2843	CHG2850	CHG2849	CHG2851
	9	Contain Box	CHL2842	CHL2841	CHL2844	CHL2843	CHL2850	CHL2849	CHL2851
	10	Accessory Assy	CEA1473	CEA1473	·····	·····	·····	·····	·····
	11	Remote Control Assy	CXA7390	CXA8336	·····	·····	·····	·····	·····

● Accessory Assy

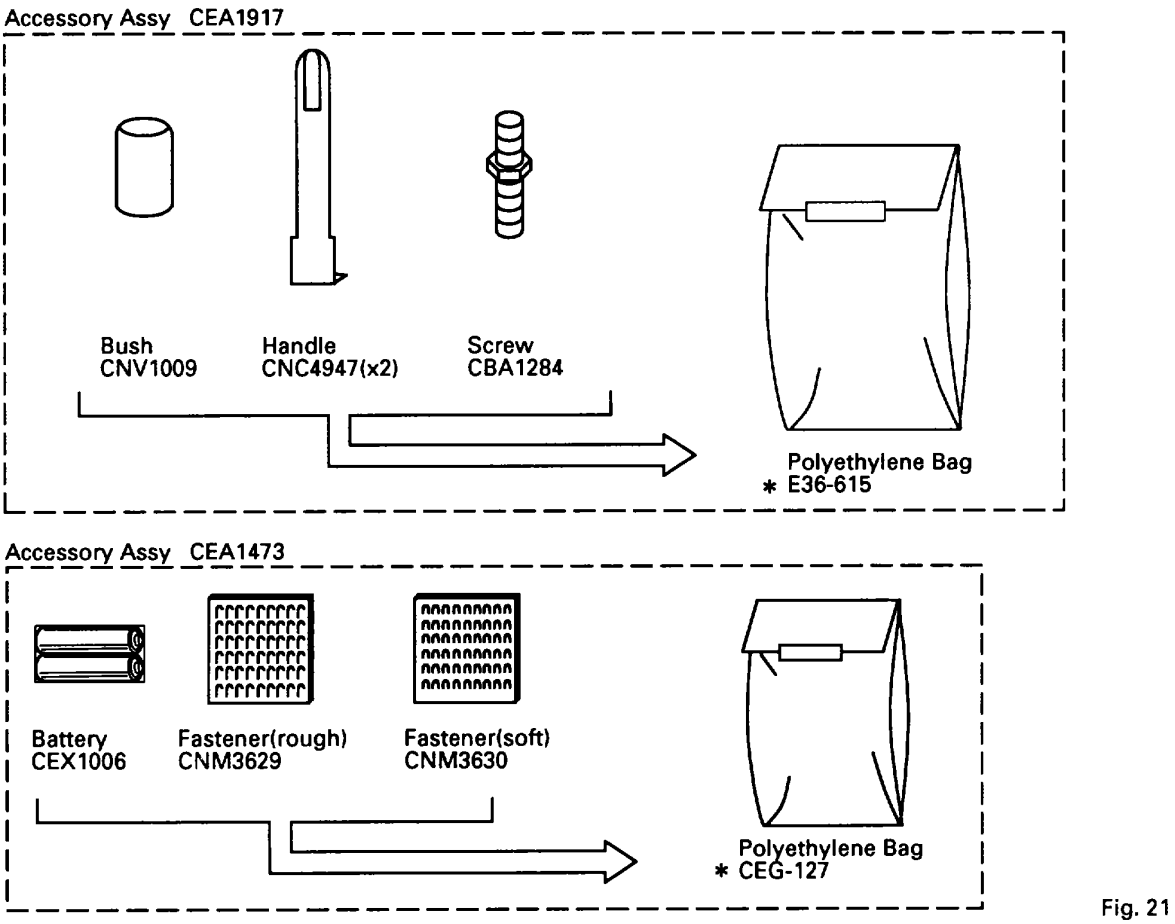


Fig. 21

PIONEER®
The Art of Entertainment

Service Manual

ORDER NO.
CRT1829

CD MECHANISM MODULE

CX-597

- **This service manual describes the operation of the CD mechanism incorporated in models listed in the table below.**
- **When performing repairs use this manual together with the specific manual for model under repair.**

Model	Service Manual	CD Mechanism Module	CD Mechanism Unit
DEH-P825R/EW, DEH-P825/UC DEH-P823/ES, DEX-P99/UC	CRT1805	CXK5011	CXA8880
DEH-P725R/EW, DEH-P725R-W/EW DEH-P725/UC, DEH-P725-W/UC DEH-P723/ES, DEH-P625/UC DEX-P88/UC, DEX-P77R/EW	CRT1812	CXK5001	CXA8870
DEH-625R/EW, DEH-624R/EW DEH-525R/EW, DEH-524R/EW DEH-424R/GR, DEH-424/EW DEH-425/IT	CRT1808	CXK5001	CXA8870
DEH-59/UC, DEH-52/UC DEH-525/UC, DEH-49/UC DEH-42/UC, DEH-425/UC DEH-225/UC, DEH-523/ES DEH-323/ES, DEH-223/ES	CRT1809	CXK5001	CXA8870

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3. DISASSEMBLY AND ASSEMBLY 17

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K-GFA. FEB. 1996 Printed in Japan

1. THE SUMMARY OF CIRCUITS

1.1 PRE-AMP SECTION (UPC2572GS: IC101)

This section processes the pickup output signals to create the signals for the servo, demodulator & control.

The pickup output signals are I-V converted by the pre-amp with built in photo-detector in the pickup, and added by the RF amp (IC101) to obtain the RF, FE, TE, TE zero cross, and other signals.

The main component is the UPC2572GS and each section is explained below. Because this system has a single power supply (+5V), the reference voltage for this IC, the PU and the servo circuit is the voltage REFO (+2.5V). The REFO signal is obtained by buffering REFOUT from the servo LSI (IC201: UPD63702GF) and is available from Pin 19 of IC101. All measurements should be done using this REFO as reference.

Note: During measurement, do not short REFO and GND.

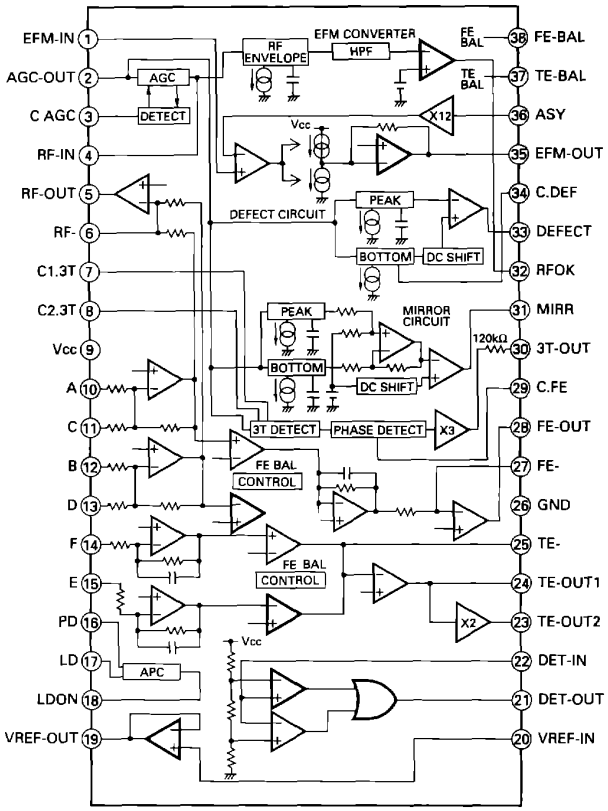


Fig.1 : UPC2572GS BLOCK DIAGRAM

1) APC Circuit (Automatic Power Control)

When the laser diode is driven with constant current, the optical output has large negative temperature characteristics. So the current must be controlled to hold the output constant with the monitor diode. The circuit that carries out this function is the APC circuit. The LD current is obtained by measuring the voltage between LD1 and ground and the value of this current is about 35mA.

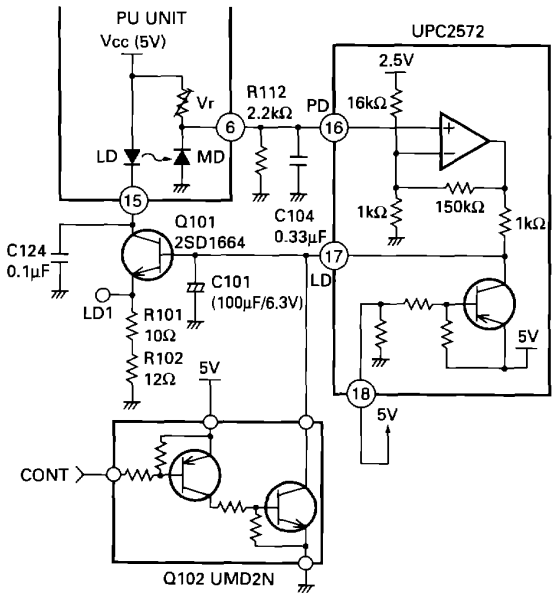


Fig.2 : APC CIRCUIT

2) RF Amp, RF AGC Amp

The photo-detector outputs (A+C) and (B+D) are added, amplified, and equalized in IC101 and output to the RFI pin. (The eye pattern can be checked at this pin.)

The RFI voltage low-frequency component is:

RFI = (A+B+C+D) × 3.22

R111 is the offset resistor for holding the RFI signal in the pre-amp's output range. The RFI signal is AC coupled and input to Pin 4 (RFIN pin).

This IC contains an RF AGC circuit, which holds the RFO output at Pin 2 at a fixed level (1.2 ± 0.2Vp-p). This RFO signal is used in the EFM, DFCT, and MIRR circuits.

3) EFM Circuit

This circuit, "squares" up the analog RF signal into a digital EFM signal. In order to ensure minimum errors it is necessary to use a feedback circuit to match the DC level of the threshold to the center of the RF waveform.

This circuit uses the fact that the EFM signal should have no DC component. By feeding back the EFM signal's DC level the threshold level changes until the DC level is zero and the threshold, by definition, is at the exact center of the RFO waveform. The filtering in the feedback has been adjusted to ensure minimum error. The EFM signal is output from Pin 35. The signal is a 2.5Vp-p amplitude signal centering on REFO.

4) DFCT (Defect) Circuit

The DFCT circuit detects defects on the disc surface, and outputs a "H" signal from Pin 33.

If there is dirt on the disc, drop outs may appear. The DFCT signal output is input to the servo LSI HOLD pin and the focus and tracking servo drives are held while the DFCT output is "H" in order to improve playability.

5) RFOK Circuit

This circuit produces the signal indicating the focus close state during play and the timing for closing the focus servo. This signal is output from Pin 32. This RFOK signal output is input to the servo LSI RFOK pin and the focus close command is issued by the servo LSI. This signal is high during play when the focus is closed.

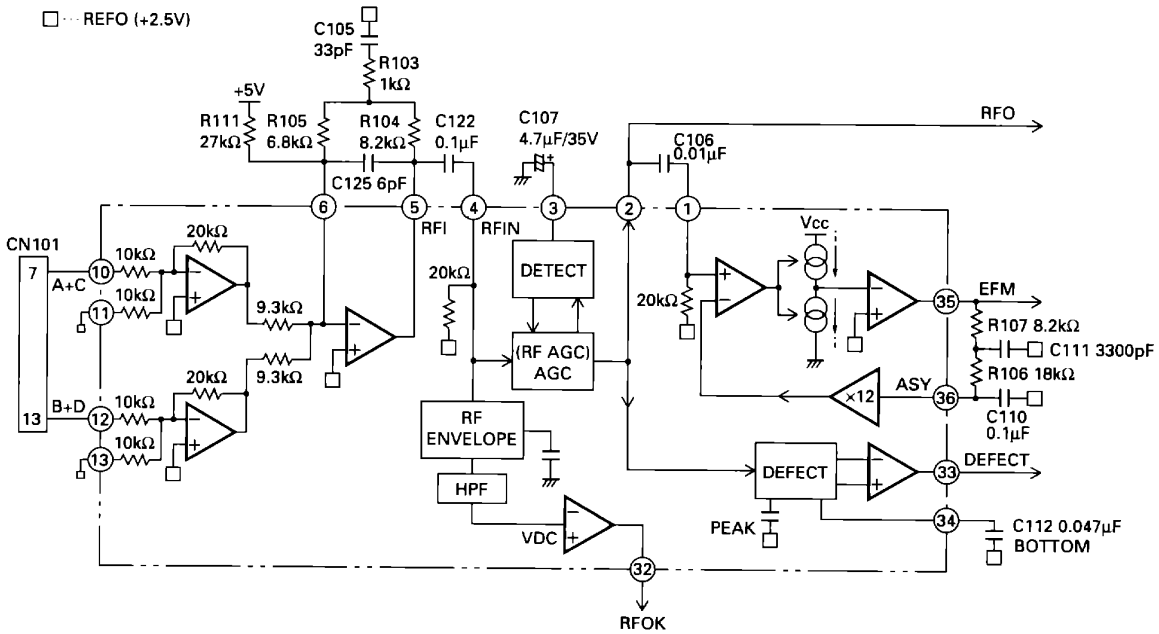


Fig.3 : RF AMP, RF AGC, EFM, DFCT, RFOK CIRCUIT

6) Focus Error Amp

The photo-detector outputs (A+C) and (B+D) are passed through a differential amp, and an error amp and (A+C-B-D) is output from Pin 28 as the FE signal.
The FEY voltage low-frequency component is:

$$FEY = (A+C-B-D) \times \frac{20k\Omega}{10k\Omega} \times \frac{90k\Omega}{68.8k\Omega} \times \frac{R108}{17.2k\Omega}$$

: (PU FE level × 5.02)

An S curve of about 1.6Vp-p is obtained with REFO as the reference. The final-stage amp cutoff frequency is 12.4kHz.

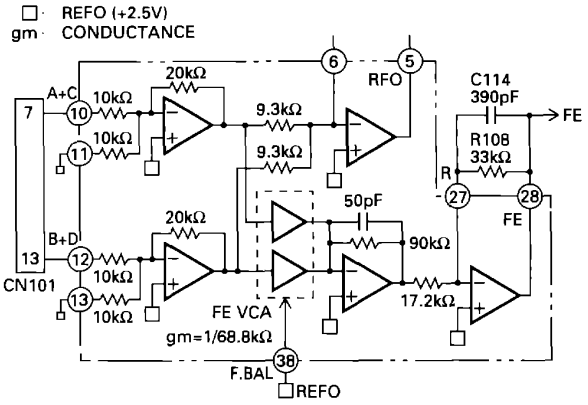


Fig.4 : FOCUS ERROR AMPLIFIER

7) Tracking Error Amp

The photo-detector E and F outputs are passed through a differential amp and an error amp and (E-F) is output from Pin 24 as the TE signal.
The TEY voltage low-frequency component is:

$$TEY = (E-F) \times \frac{63k\Omega}{(31k\Omega+16k\Omega)} \times \frac{R109}{17k\Omega}$$

: (PU TE output level × 5.36)

The TE waveform of about 1.5Vp-p with REFO as the reference is obtained as the TE output (Pin 24). The final-stage amp cutoff frequency is 19.5kHz.

8) Tracking Zero Crossing Amp

The tracking zero crossing signal (below, TEC signal) is the TE waveform (Pin 24 voltage) amplified four times and is used to find the zero crossing points of the tracking error with the UPD63702GF servo LSI. This zero crossing point is found for the following two reasons.

(1) To count tracks for carriage moves and track jumps
(2) To detect the direction in which the lens is moving for tracking closing (This is used in the tracking brake circuit, described Page 9 b).)

The TEC signal frequency range is 500Hz - 19.5kHz.

TEC voltage = TE level × 4

In other words, the TEC signal level is calculated at 6Vp-p. This level exceeds the op-amp's output range and the signal is clipped, but this can be ignored because this signal is used by the servo LSI only at the zero crossing point.

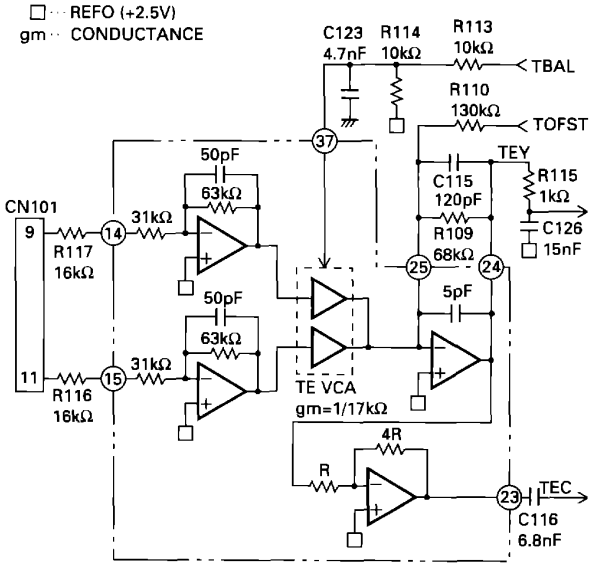


Fig.5 : TRACKING ERROR AMPLIFIER & TRACKING ZERO CROSSING AMPLIFIER

9) MIRR (Mirror) Circuit

The MIRR signal shows the on track and off track data and is output from Pin 31.

When the laser beam is

On track: MIRR = "L"

Off track: MIRR = "H"

This signal is used in the brake circuit, described Page 9 b).

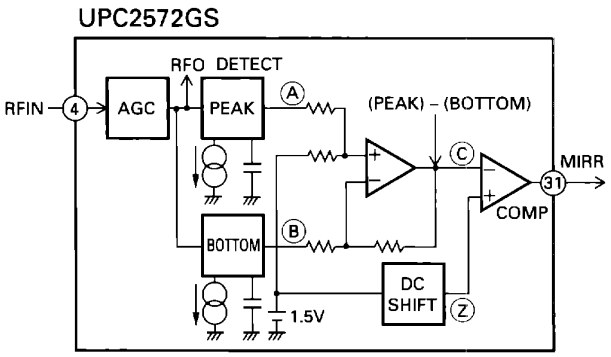


Fig.6 : MIRR CIRCUIT

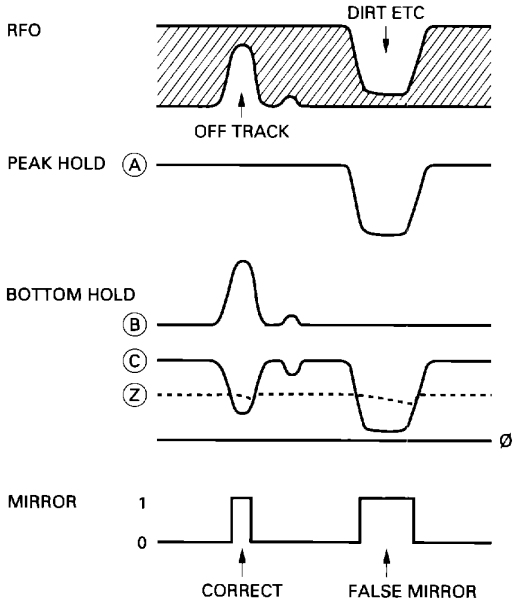


Fig.7 : MIRR CIRCUIT & SIGNAL DIAGRAM

10) 3TOUT Circuit

This circuit detects variations of the RF signal when an external interference is input into the focus servo loop and outputs the phase difference between the FE signal and the RF level variation signal from Pin 30. The signal has been passed through a low-pass filter (fc = 40Hz). This signal is used for the FE bias automatic adjustment, described Page 12 4).

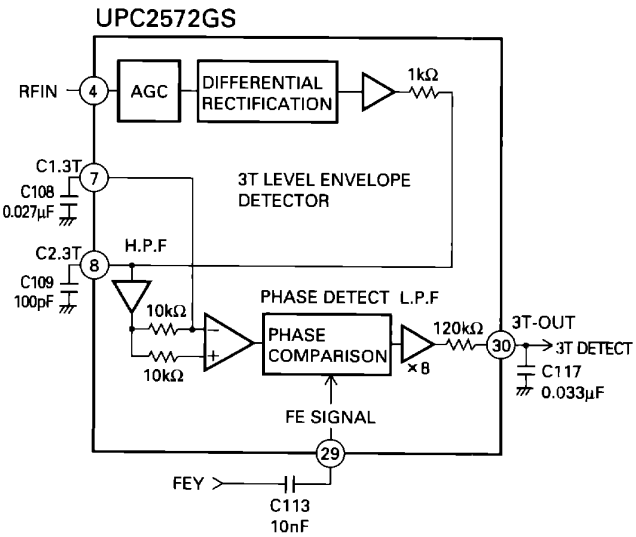


Fig.8 : 3T OUT CIRCUIT

1.2 SERVO SECTION (UPD63702GF: IC201)

This section can be divided into two parts.
One is the servo processing section, which handles such servo controls as error signal equalizing, in focus, track jump, and carriage move. The other is the signal processing section, which handles data decoding, error correction, and interpolation processing.
This IC converts the FE and TE signals from analog to digital and outputs the focus, tracking, and carriage drive signals via the servo block. Also, the EFM signal from the pre-amp is decoded in the signal processing section and finally output as audio signals after D/A conversion. (This IC has a built in audio digital-analog converter.) The decoding process also creates the spindle servo error signals, which is fed to the spindle servo block to create the spindle drive signal.
The focus, tracking, carriage, and spindle drive signals are then amplified by IC301, XLA6997FP and fed to their respective actuators and motors.

1) Focus Servo System

The main focus servo equalizer is in the UPD63702GF. Figure 9 is the focus servo block diagram.
In the focus servo system, the lens must be brought within the in-focus range for focus closing. Therefore, the lens is raised and lowered according to the triangular focus search voltage to find the focus point. During this time the spindle motor is kicked and kept rotating at a set speed.
The servo LSI monitors the FE signal and the RFOK signal and automatically carries out the focus close operation at the appropriate point.
Focus closing is carried out when the following four conditions are all met.
(1) The lens is moving from far to near toward the disc surface.
(2) RFOK = H
(3) The FZD signal (within the IC) is latched at high.
(4) FE = 0 (REFO reference)

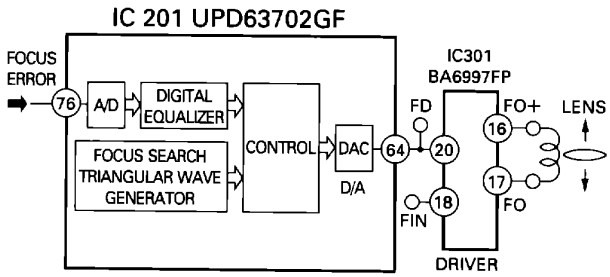


Fig.9 : FOCUS SERVO BLOCK DIAGRAM

When the above conditions are all met and the focus is closed, the XSO signal is shifted from high to low, then 40ms later, the microcomputer begins to monitor the RFOK signal that is passed through the low pass filter.
When the RFOK signal is judged to be low, the microcomputer carries out various actions such as protection.
Figure 10 shows the series of operations for focus closing (for the case where focus cannot be closed.) Also, in focus-mode-selection during test mode when the display is 01, if the focus close button is pressed, the S curve, search voltage, and actual lens movements can be checked.

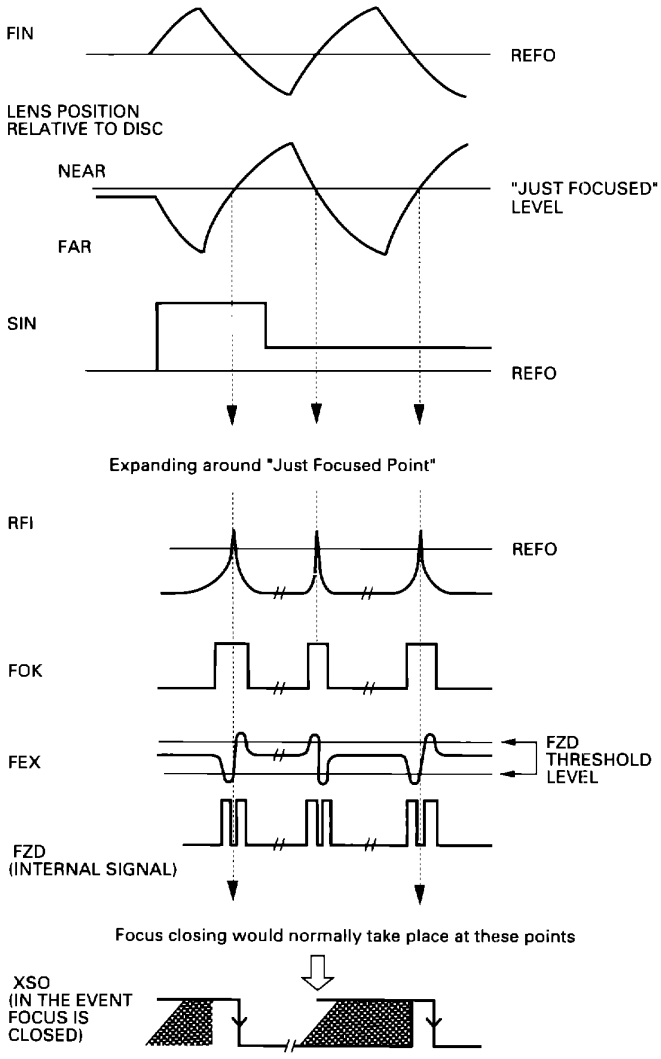


Fig.10 : FOCUS CLOSING SEQUENCE

2) Tracking Servo System

The main tracking servo equalizer is in the UPD63702GF. Figure 11 is the tracking servo block diagram.

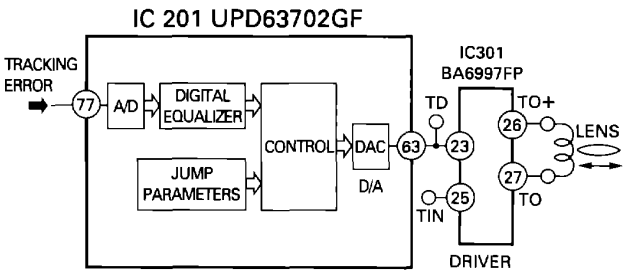


Fig.11 : TRACKING SERVO BLOCK DIAGRAM

a) Track Jump

When the LSI receives the track jump command from the microcomputer, the track jump is carried out automatically by the auto sequence function within the LSI. This system has six types of track jumps used for searches: 1, 4, 10, 32, 32 × 2, and 32 × 3. In test mode, in addition to these jumps, CRG moves can be executed and checked by mode selection. For track jumps, the microcomputer sets half of the total number of jumps (2 tracks for a 4 track jump) and counts the set number of tracks using the TEC signals. From the point when it has counted the set number of tracks, it outputs the brake pulse for a fixed period of time (set by the microcomputer) to stop the lens. In this way, it can close the tracking and continue normal play.

To improve the servo loop re-closing performance just after track jump, the brake circuit comes on for 60ms after the end of the brake pulse and the tracking servo gain is increased.

Fast forward and reverse operations in normal mode are realized by executing consecutive single track jumps. The speed is about 10 times as high as in normal play.

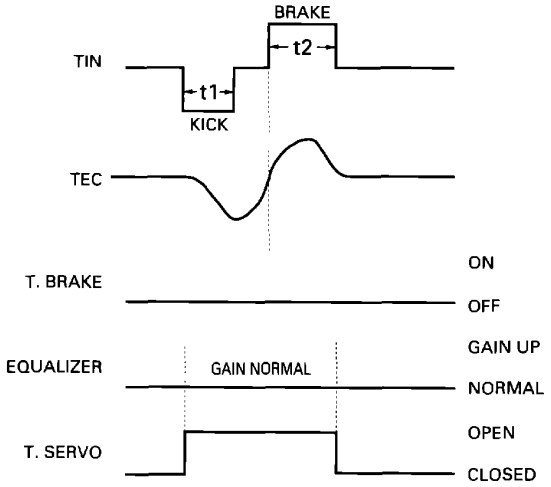


Fig.12 : SINGLE TRACK JUMP

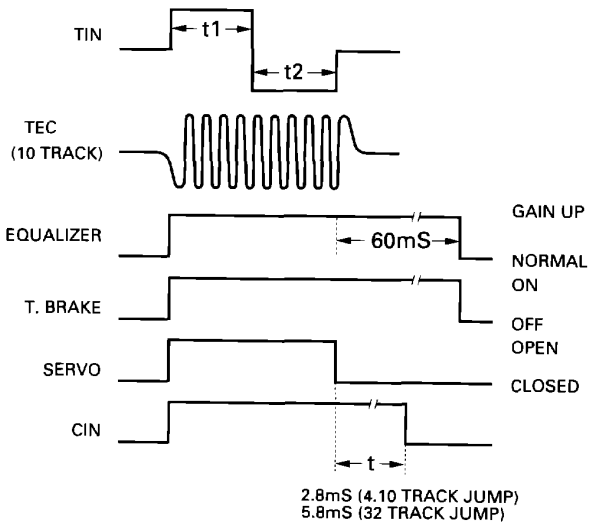
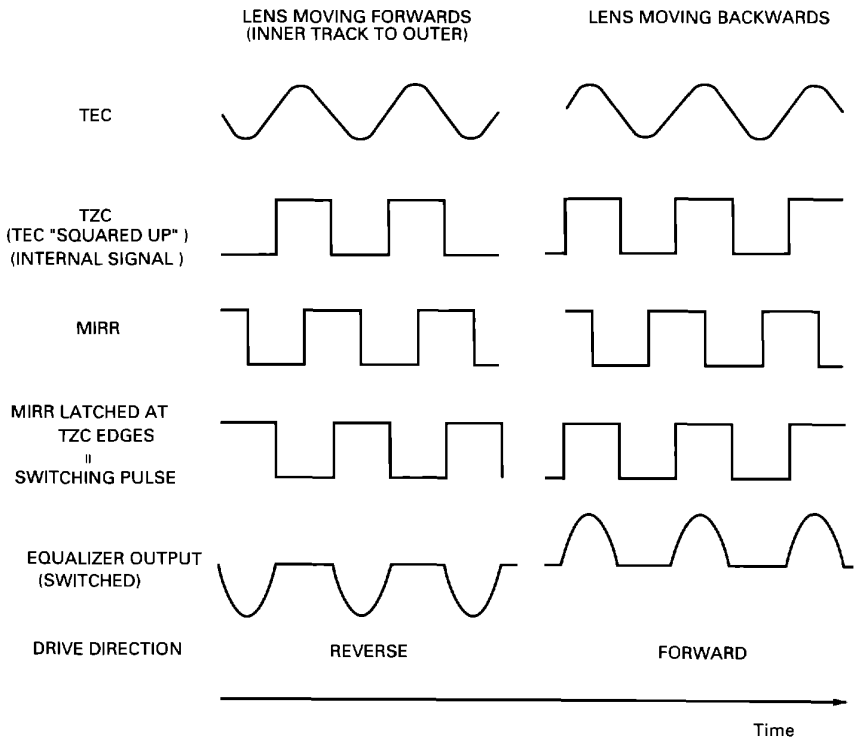


Fig.13 : MULTI-TRACK JUMP

b) Brake Circuit

This relies on determining which direction the lens is moving and only outputting the portion of the drive waveform which acts to oppose this motion. Direction of motion is deduced from TEC and the MIRR signal and knowledge of their phase relation.



Note: Equalizer output assumed to hava same phase as TEC.

Fig.14 : TRACKING BRAKE CIRCUIT

3) Carriage Servo System

The carriage servo supplies the tracking equalizer's low-frequency component (lens position information) output to the carriage equalizer and after applying a fixed amount of gain, outputs the drive signal from the servo LSI. This signal is applied to the carriage motor through the driver IC.

When the lens offset reaches a certain level during play, the entire PU must be moved in the forward direction. Therefore, the equalizer gain is adjusted to output a voltage higher than the carriage motor starting voltage. In actual operations, a certain threshold level is set for the equalizer output within the servo LSI and the drive voltage is output from the servo LSI only when the equalizer output level exceeds that threshold level. This reduces power consumption. Also, due to disc eccentricity and other factors, the equalizer output voltage may cross the threshold level a number of times before the entire PU starts to move. In this case, the drive voltage waveform, (which is applied) from the LSI, becomes pulsative.

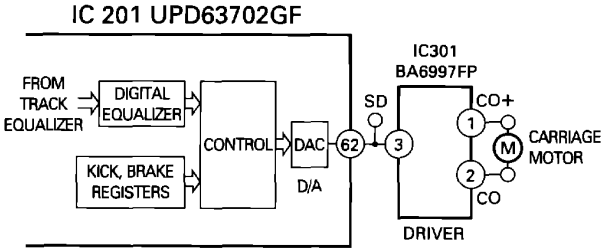


Fig.15 : CARRIAGE SERVO CIRCUIT

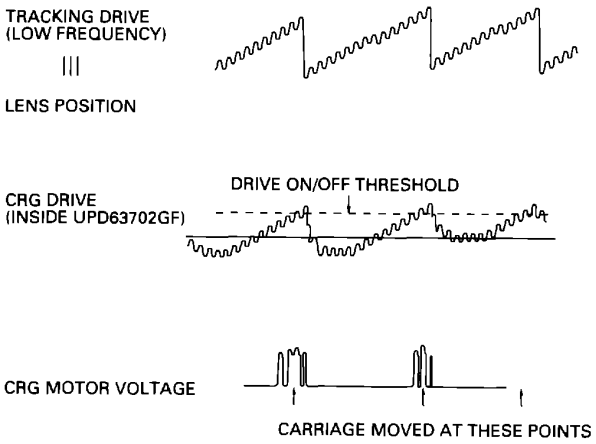


Fig.16 : CARRIAGE WAVEFORM

4) Spindle Servo System

The spindle servo has the following modes.

(1) Kick: The mode used for disc rotation acceleration during setup

(2) Offset:

a) Used during setup from the end of kick until the AGC end

b) Used during play when the focus is unlocked until it is recovered

Both of these are for holding the disc rotation rate near the normal rotation rate.

(3) Adaptive servo: CLV servo mode for normal operation

In the EFM demodulation block, the frame sync signal and internal frame counter output signal are sampled each WFCK/16 and a signal is produced indicating whether or not they match. Only after this signal is in non-match mode eight consecutive times, is the system treated as out of sync, at other times it is treated as in sync. In this adaptive servo mode, a servo mode for pulling the system into sync is automatically selected when the system is out of sync and the regular servo is automatically selected when the system is in sync.

(4) Brake: The mode for stopping the spindle motor rotation

The brake voltage is output by the microcomputer from the servo LSI. At this time, the EFM wave form is monitored within the LSI and if the longest EFM pattern exceeds a certain interval (when the rotation is slow enough), a flag is registered within the LSI and the microcomputer switches the brake voltage off. If the flag is not registered within a certain period of time, the microcomputer switches from brake mode to stop mode which lasts for a fixed period of time. In this case, ejection of the disc can only occur after this period of time.

(5) Stop: The mode used during power on and ejection

At this time, the voltage across the spindle motor is 0V.

(6) Rough servo: The mode used for carriage feed (carriage move during a long search)

The linear speed is calculated from the EFM wave form and a high level or low level is input to the spindle equalizer. In test mode, this mode is also used for the grating check.

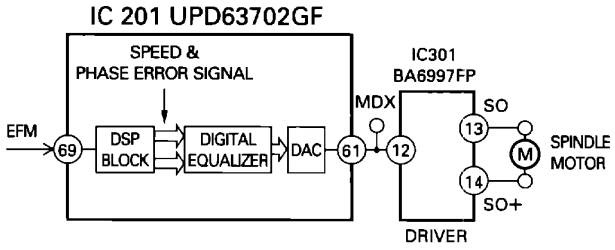


Fig.17 : SPINDLE SERVO BLOCK DIAGRAM

1.3 AUTOMATIC ADJUSTMENT FUNCTIONS

This system uses a pre-amp (UPD2572GS) and servo LSI (UPD63702GF) to automate all circuit adjustment. All adjustments are carried out automatically each time a disc is inserted or the CD mode is selected with the source key. Here is how each automatic adjustment works.

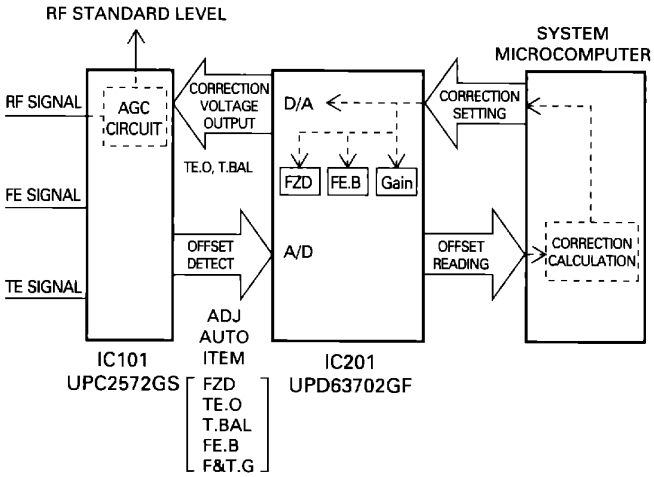


Fig.18 : AUTOMATIC GAIN CONTROL

1) FZD Cancel Setting

This setting is to make the focus closing reliable. When the power is switched on, the FE offset level is read and a voltage opposite to this offset value is written to the CRAM in the IC to cancel the offset. In this way, the FZD threshold level can be set to a constant value (+150mV) and one of the conditions within the IC for focus closing "that the FZD signal is latched at high" can be fulfilled reliably.

2) TE Offset Automatic Adjustment

This function adjusts the pre-amp TE amp offset to 0 V when the power is switched on.

The adjustment procedure is:

(1) The TE offset (LD off) is read by the microcomputer via the servo LSI (offset = TE1).

(2) The microcomputer calculates the voltage to be corrected from the value of TE1 and sets the output of Pin 65 of the servo LSI (signal name: TOFST). The concrete calculation method is as follows.

TOFST2 = TOFST1 + TE1 × R110/R109

3) Tracking Balance Automatic Adjustment

This adjustment equalizes the difference in sensitivity of the E channel and F channel of the TE output. In actual practice, the TE waveform is adjusted to be vertically symmetrical about REFO.

The adjustment procedure is:

(1) After focus closing, the lens is kicked in the radial direction to reliably generate the TE waveform.

(2) At this time, the microcomputer reads the peak and bottom of the TE waveform through the servo LSI.

(3) The microcomputer calculates the value of the offset and the correction voltage to output from Pin 66 of the servo LSI (signal name: TBAL).

(4) The voltage output from the servo LSI is input to Pin 37 of the pre-amp (IC101: UPC2572). This pin is the TEVCA amp control voltage pin. The gain for the E channel and F channel within the pre-amp is varied according to the input voltage to adjust the tracking balance and make the TE waveform vertically symmetrical about REFO.

4) FE Bias Automatic Adjustment

This adjustment is made to maximize the RFI level during play by optimizing the focus point. This adjustment utilizes the phase difference between the RF waveform 3T level signal and the focus error signal. Since an external interference is input into the focus loop, this adjustment uses the same timing as the auto gain control, explained below.

The adjustment procedure is:

(1) External interference is injected into the focus loop by command from the microcomputer (within the servo LSI).

(2) The RF signal 3T component level variation is detected within the pre-amp.

(3) The phase difference between the FE signal due to external interference input and the above 3T component is detected, to sense the focus deviation direction, and the result is output as a DC voltage from Pin 30 (3T-OUT) of the pre-amp.

(4) The 3T-OUT voltage is input to Pin 75 (A/D port) of the servo LSI and the microcomputer reads the 3T-OUT voltage through the servo LSI.
(5) The microcomputer calculates the required correction and adjusts the focus loop offset in the servo LSI.

In the same manner as the auto gain control, this adjustment is repeated a number of times to raise the adjustment precision.

5) Auto Gain Control (AGC)

This adjustment has already been used in the previous generation of CD modules. This function automatically adjusts the focus and tracking servo loop gain.

The adjustment procedure is:

(1) External interference is injected into the servo loop.
(2) The error signals (FE, TE) when the external interference is injected are passed through a band pass filter and the G1 and G2 signals are obtained.
(3) The microcomputer reads the G1 and G2 signals through the servo LSI.
(4) The microcomputer calculates the required correction and adjusts the loop gain within the servo LSI.

To raise the adjustment precision, the same adjustment procedure is repeated a number of times.

6) Initial Adjustment Values

All the automatic adjustments use the previous adjustment value as the initial value as long as the microcomputer power supply is not cut off (the backup is not cut off). If the backup is cut off, automatic adjustment does not start from the previous adjustment value, but rather from the default setting.

7) The Coefficient Display for Adjustment Result

The results of all automatic adjustments can be displayed and checked in test mode.

The coefficient displays for each automatic adjustment are as follows.

(1) FZD cancel, TE.OFST cancel, T.BAL, FE.bias
Reference value = 32 (A coefficient of 32 indicates that no adjustment was necessary).
The display is in units of about 40mV.
Example: FZD cancel coefficient = 35
35-32 = 3 $3 \times 40mV = 120mV$
Since the corrected value is approximately + 120mV, the FE offset before adjustment was - 120mV.

(2) Focus and tracking gain adjustment
Reference value: Focus = 13, tracking = 20
The coefficient display shows the gain derease relative to the reference value.
Example: AGC coefficient = 40
Gain = 20log (20/40) = - 6dB

1.4 POWER SUPPLY AND LOADING SECTION

The power supply within the system makes the loading motor drive power supply VM (7.6V) and 5V Reg IC power (6.9V) from VD (8.3V) supplied by the mother board. The disc detection LED drive voltage and the CD driver IC power supply use VD directly.

The microcomputer switches the CD driver and laser diode on/off with "CONT" and switches the 5V power on/off with "CD5VON". There is no particular control pin for the loading motor driver, but the "EJ" and "LOAD" input signals serve the same role.

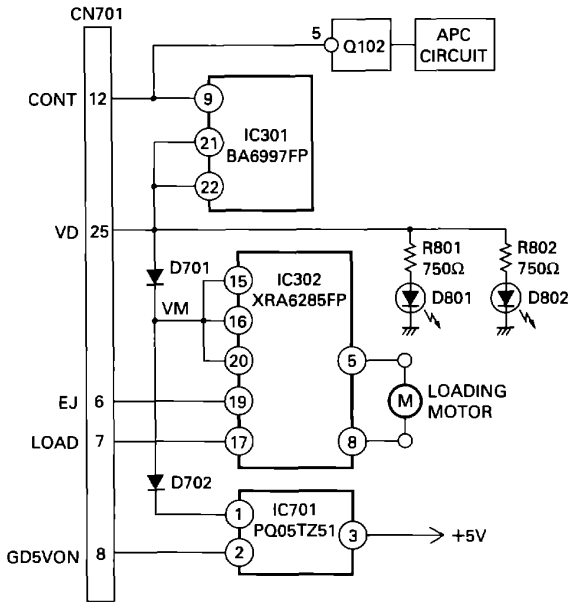


Fig.19 : POWER SUPPLY & LOADING SECTION

2. THE SUMMARY OF STRUCTURE

● Disc Loading Operations

1. There are two photo transistors before and after the rubber roller that conveys the disc. They receive light from the corresponding two LEDs. (When light is received, the photo transistor voltage is low.)
2. When a disc is inserted to just before the rubber roller, the front section photo transistor (P1) voltage goes high and the loading motor drive starts.
3. The drive power of the motor is transmitted by gear and the rubber roller rotates to transport the disc.
   The rubber roller is at one end of the loading arm and lifts up the guide arm. The guide arm is positioned by two springs. Therefore the guide arm and the rubber roller provide the appropriate pressure to feed out the disc between them.
4. The clamper arm also has a disc centering mechanism that discriminates the size of the disc and clamps the disc at the center of the spindle motor. The centering arms form a set left and right on the clamper arm and can move centering on their pivots. At the end of the centering arms are the lock arms. (The lock arms rotate about the centering pins and are locked to the clamper arm for 8cm discs.)
   For 12cm discs, the lock arms are unlocked and move to the position indicated in Figure 21.
   The detection arm, which has its center of rotation on the centering arm on the right side of the diagram, has different positions for 8cm and 12cm discs. When one of these discs is positioned on the spindle, the detection arm moves clockwise according to the external diameter of the disc and moves the detection lever to the bottom side of the figure.

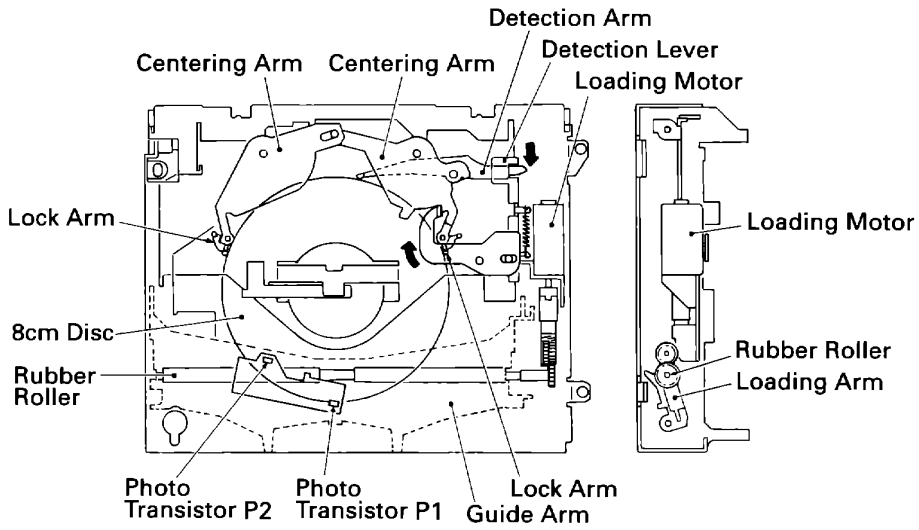


Fig.20

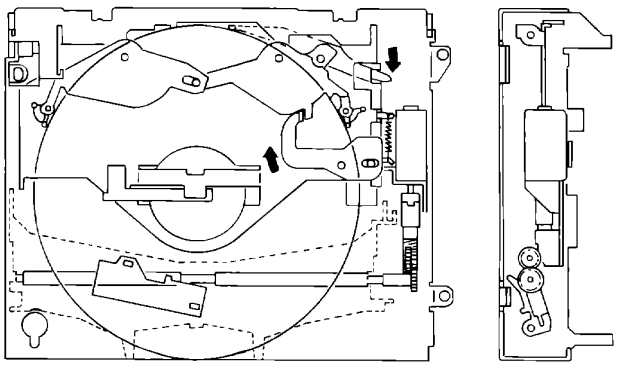


Fig.21

● Clamp Operation

The rack gear touching the detection lever meshes with the gear driven by the loading motor and rotates the L arm in the direction of the arrow in Figure 23.
The clamper arm, lifted up by the L arm, descends and clamps the disc. Also, the lock lever linked with the L arm moves the loading arm.
Because of this, the rubber roller descends, separating from the disc. At the same time the guide arm also descends. Loading ends at the position where the lock lever switches on the clamp switch.

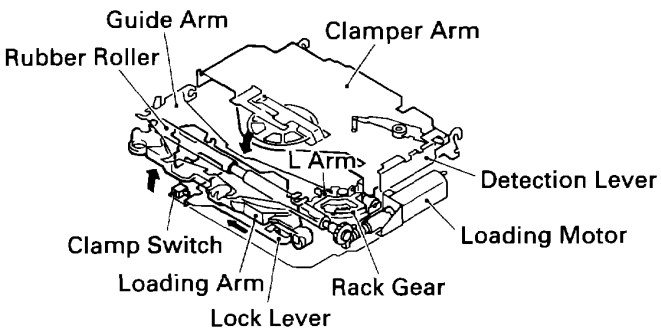


Fig.22

● Mechanism Lock Operation

1. In the eject state, both ends of the loading arm touch the bottom of the frame, the floating section front side is pushed down against the resistance of the mechanism suspension spring, and the disc insertion height position is found.
   For play, the loading arm rotates and the separation of the two ends from the frame bottom releases the floating section.

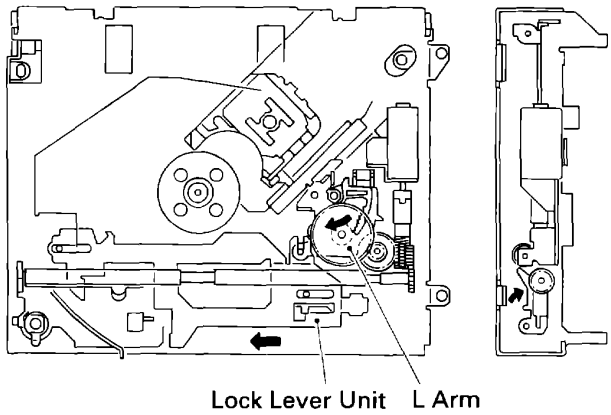


Fig.23

● Eject

1. The eject mechanism operates by reversing the rotation which takes place when the loading motor loads. The L arm moves and operates the mechanical lock, the clamp is released, the roller is applied, and the disc is conveyed. Loading stops when the photo transistor to the rear of the rubber roller (P1) is illuminated.
   However, in case of an 8cm disc, motor revolution stops a fixed period of time after P2 is illuminated. The disc type is recognized during play, by the voltage of the photo transistor (P1) located in front of the rubber rollers.

3. DISASSEMBLY AND ASSEMBLY

Remove in the order of the circled numbers in the disassembly diagram.

1. Remove the CD Mechanism Module

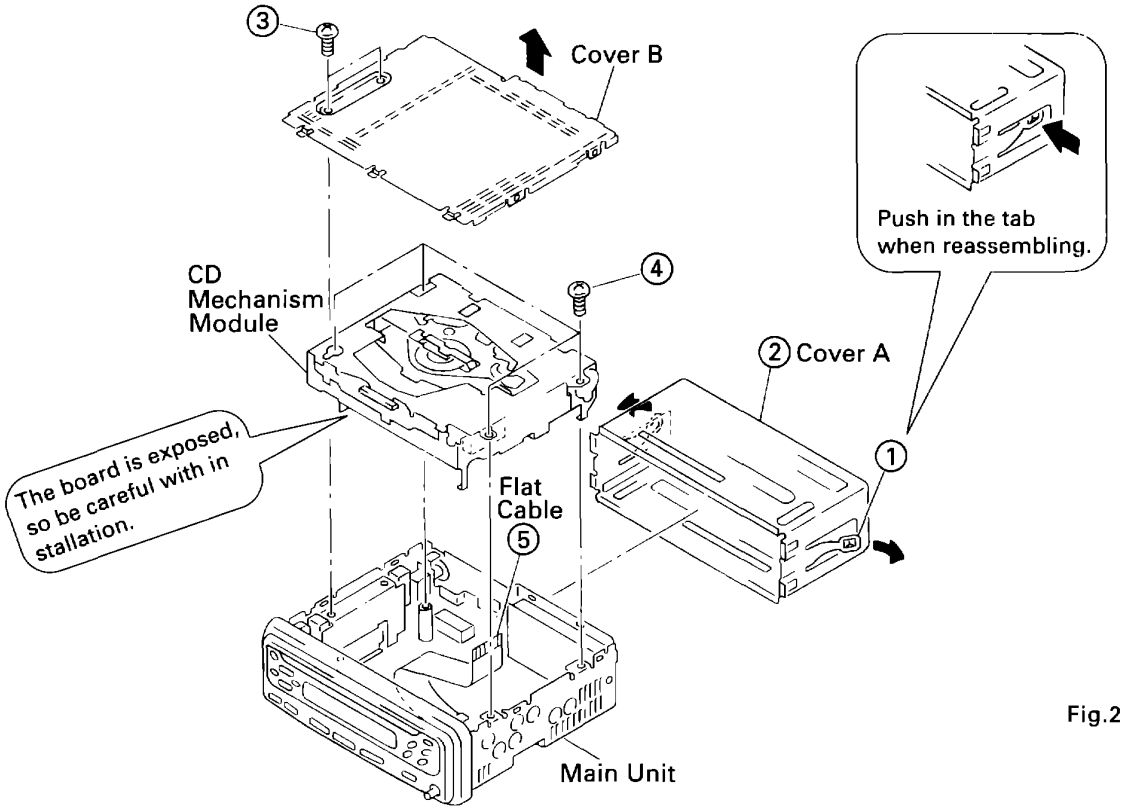


Fig.24

2. Remove the Damper and the Frame Unit

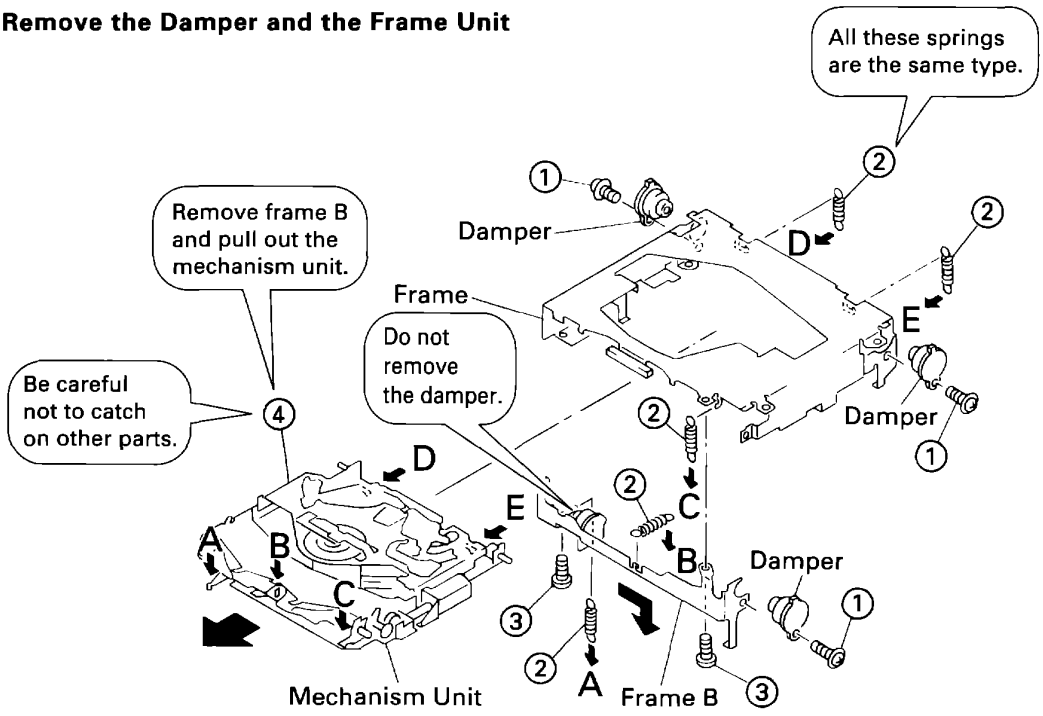


Fig.25

3. Remove the Spindle Motor

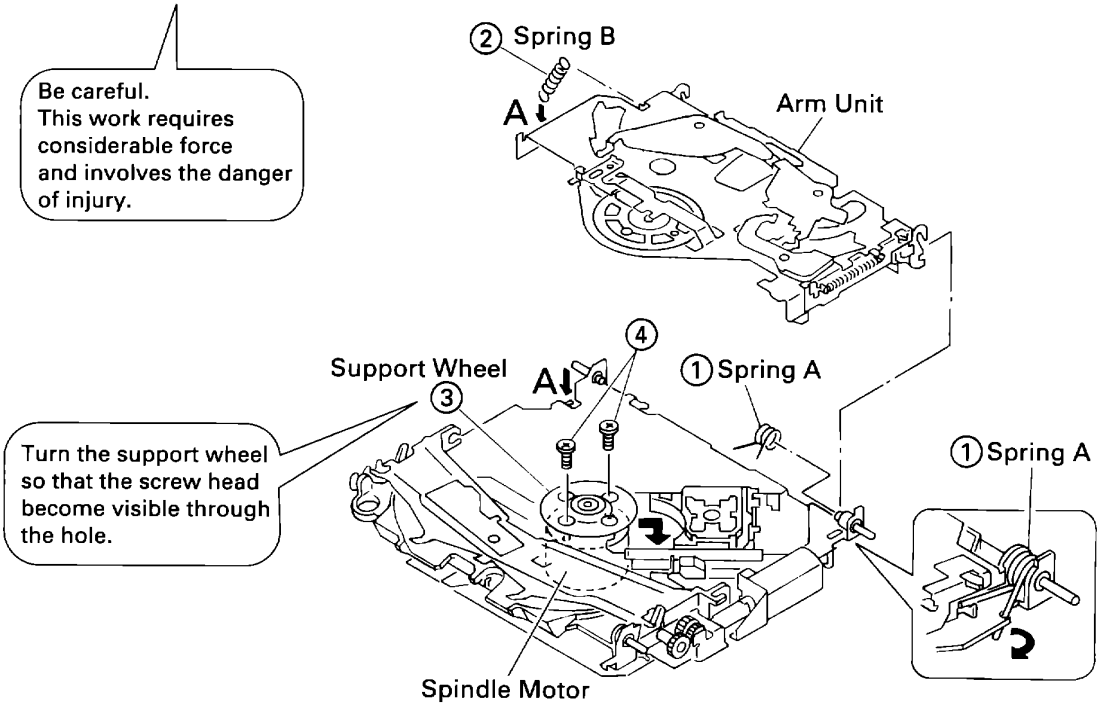


Fig.26

4. Remove the Loading Motor

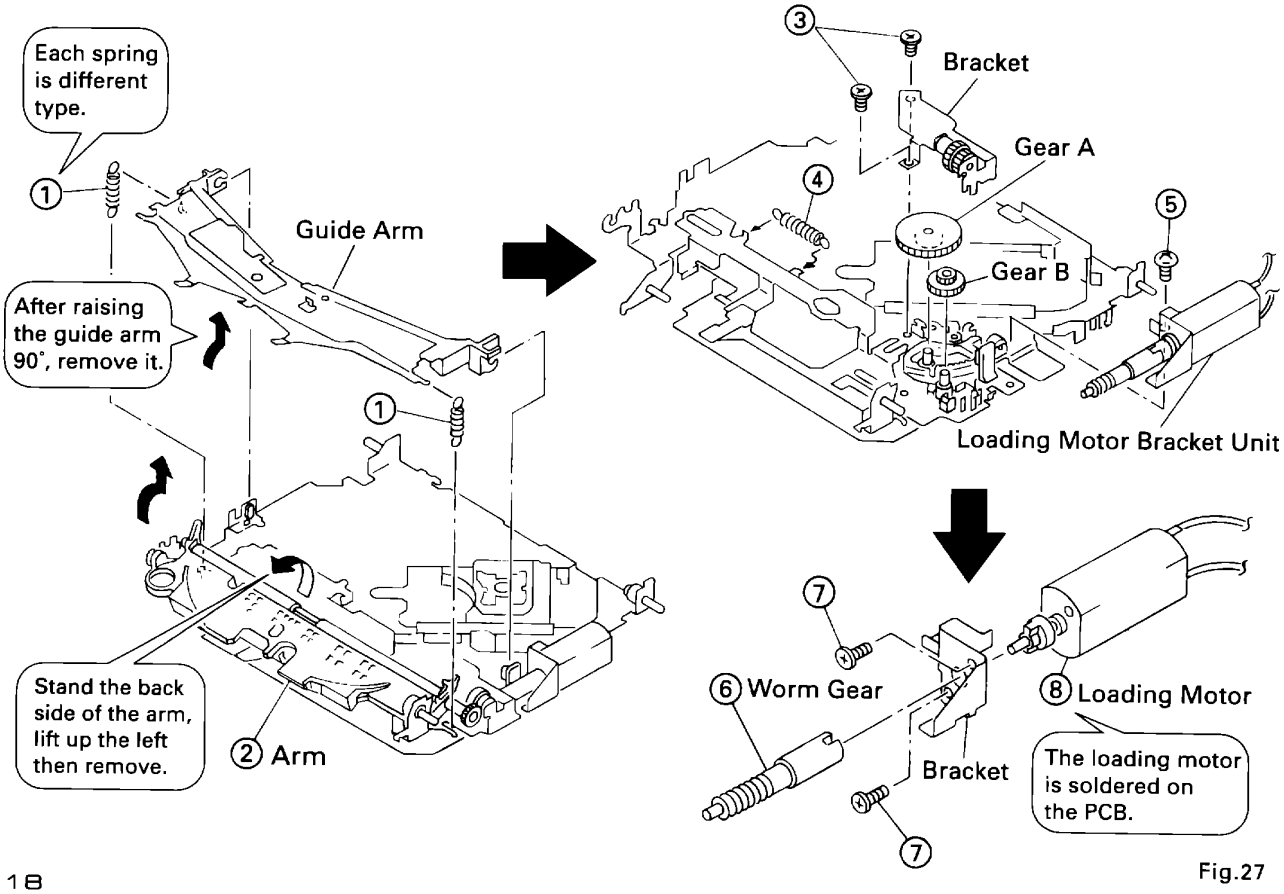


Fig.27

5. Remove the PU Unit and the Carriage Motor

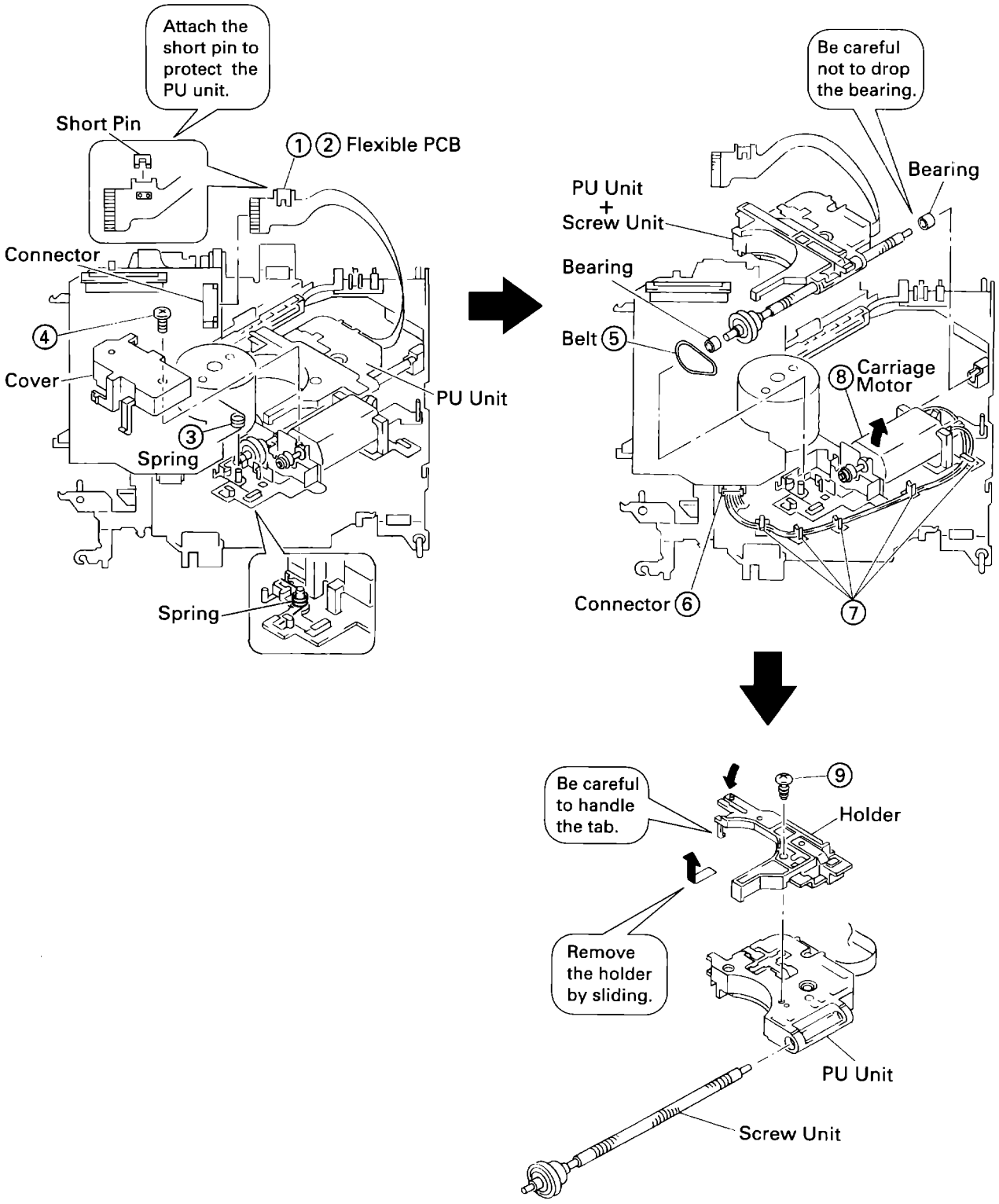


Fig.28